

NetworkWorld

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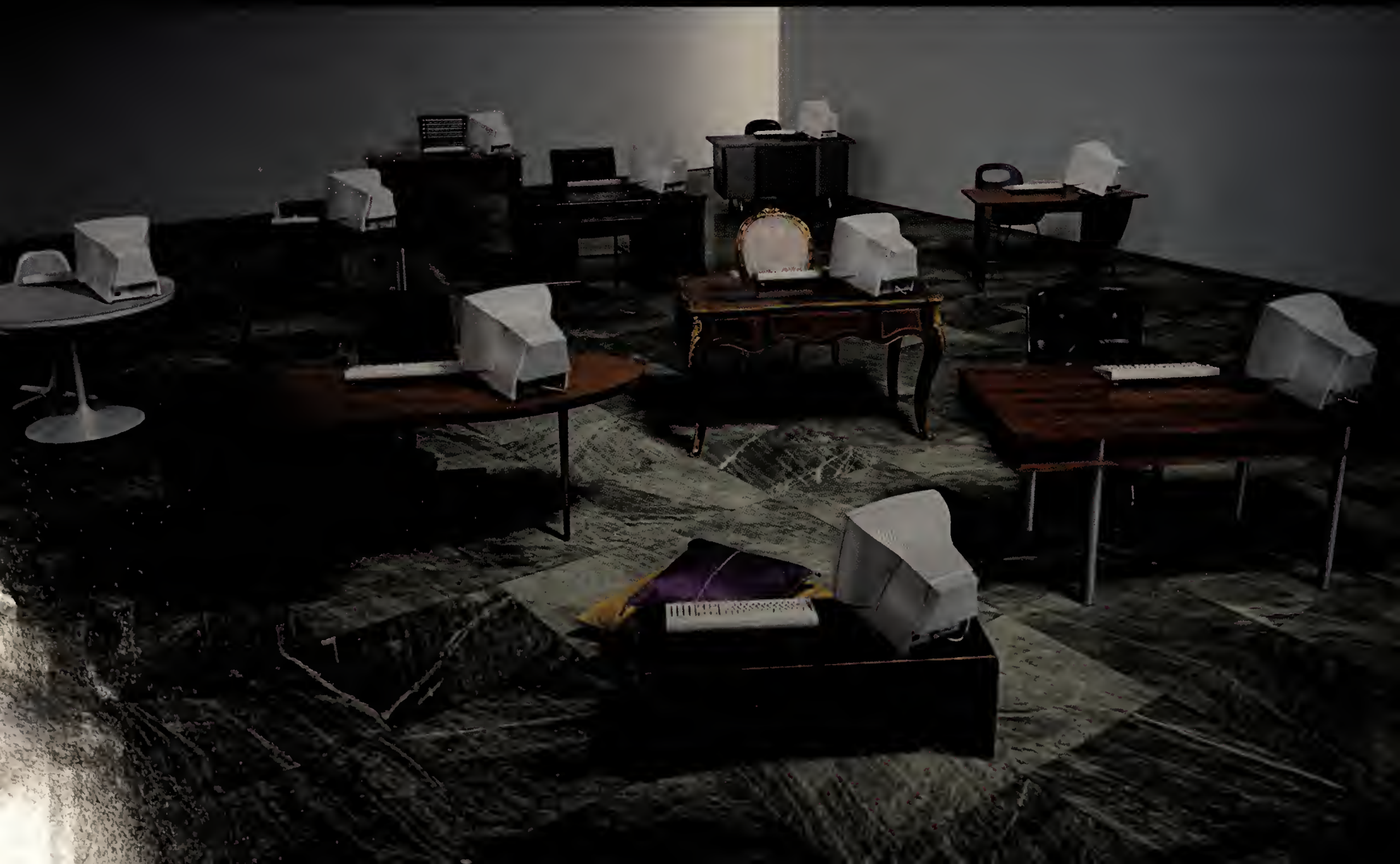
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the people,
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technologies and
ideas ruling the
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The Power Issue

Our annual coronation of the people, companies, technologies and ideas ruling the network world

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COVER ILLUSTRATION: YUAN LEE

THE
Signature
SERIES

The Power Issue is one of six bimonthly supplements providing insights, opinions and information on the biggest trends shaping the networked world. Watch for the Best Products Issue, a look at the hottest network products, coming Feb. 23, 2004.

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The epitome of

BY BETH SCHULTZ

Executive power starts with personal integrity. Who has it? That's one question I posed to a group of venture capitalists and executive recruiters recently when I asked them to help me build an ultimate network industry "Dream Team."

I required this executive power team to include a CEO along with leaders for an imaginary start-up's financial, marketing and technology departments. No holds barred, I told them — yank 'em out of retirement, steal 'em from competitors, rob other companies of their business acumen, market savvy, technical expertise — who would they want on the executive management rosters?

Dream Team CEOs

Cisco CEO John Chambers, as you'd expect, popped up without fail as an exemplary CEO candidate. Although well beyond taking a start-up's helm, he possesses the characteristic trio of intelligence, motivation and maturity that must mark today's CEO, says Len Doherty, principal at L.J. Doherty & Associates, an executive search firm in Sudbury, Mass.

True, says Stuart Phillips, general partner with U.S. Venture Partners (USVP) and one-time Chambers' employee. Chambers embodies what a CEO should be: "intellectually honest, very smart and someone who is adaptable," he says.

Chambers surely does a good job of passing those fundamentals on to his underlings — half of our source's A-list CEO candidates for the executive Dream Team have worked or currently work for him. Don Listwin, now CEO at Openwave Systems; Carl Russo, now CEO at Calix; and Mike Volpi, senior vice president in charge of Cisco's Routing Technology Group; are among those our sources consider fantastic CEO candidates for the start-up or, in the case of those who already have CEO experience, a young public company.

Outside the Cisco camp, network veterans who came to the fore as Dream Team CEOs are Desh Deshpande (Cascade Communications, Sycamore Networks, now retired).

Mory Ejabat (Ascend Communications, Lucent, now CEO of Zhone Technologies); Dominic Orr (Alteon WebSystems, Nortel, now retired); and Surya Panditi (Avici Systems, US Robotics, now CEO of Polaris Networks). With their leadership prowess, these executives are easy choices to take over just about any corporate helm, our sources say.

Finance et al

When it comes to the top finance role, you need someone who can be comfortable being a business partner to a CEO, who has the strength of character and trust relationship with the CEO to talk straight on tough issues, USVP's Phillips says. You want people who have shown they can think strategically about the financial viability and growth opportunities of a company, adds Ryan Floyd, general partner at Storm Ventures. Larry Carter (Cisco), Mike Johnson (Ascend, Amber Networks) and Jack Pacheco (Solelectron, now vice president of finance at Ignis Optics) bubbled up with attributes suitable for the top finance spot.

Jeannette Symons (Ascend, now CTO and vice president of engineering at Zhone) popped up as a good candidate for the vice president of engineering slot, as did Shirish Sathaye (Fore Systems, Alteon, now general partner with venture capital firm Matrix Partners). "You want someone who is smart, highly pragmatic, who has great leadership

skills, is high energy and hard working, with a demonstrated history of ability to deliver products. You need someone who knows the limits and who, from an integrity standpoint, is not afraid to speak the truth," says Susan Moore, a general partner with Onset Ventures.

In a CTO, you also need vision — the ability to see how to use technology in multiple ways to solve fundamental business problems, the sources say. Ed Kozel (Cisco, now retired) and Andy Bectolsheim (Sun, Granite Systems, Cisco, now retired) are ideal Dream Team CTOs.

Vice presidents of product management/marketing have the unique talent of being able to speak with cus-

tomers, understand those needs and then work with engineering to define how to meet those needs through technology, Mason says. Technical knowledge plus an understanding of markets and market analysis are must-haves, sources agree. A good choice? Jim Goetz (Bay, VitalSigns Software, Lucent, now a partner with Accel Partners).

Real-life Dream Team

Mason calls out the entire executive management team at Alteon, a bubble start-up acquired in mid-2000 by Nortel for more than \$7 billion in stock, as a true-life, powerful Dream Team. Alteon had a "great" leader in Orr; "an engineering team that executed flawlessly" under the direction of Sathaye; "fabulous" product management under Selina Lo, and smart business financial and operational decision-making under Jim Burke and Joe Booker, she says. "Everyone clicked together. They knew the objectives, and ...executed very well," Mason says.

Many of these ultimate power team names are readily recognizable to those of us who are longtime followers of the network industry. But even the most obscure names share a few attributes. They are consummate professionals with a proven understanding of business operations and market conditions. Above all, they are known for high integrity. That makes them the epitome of power. ■



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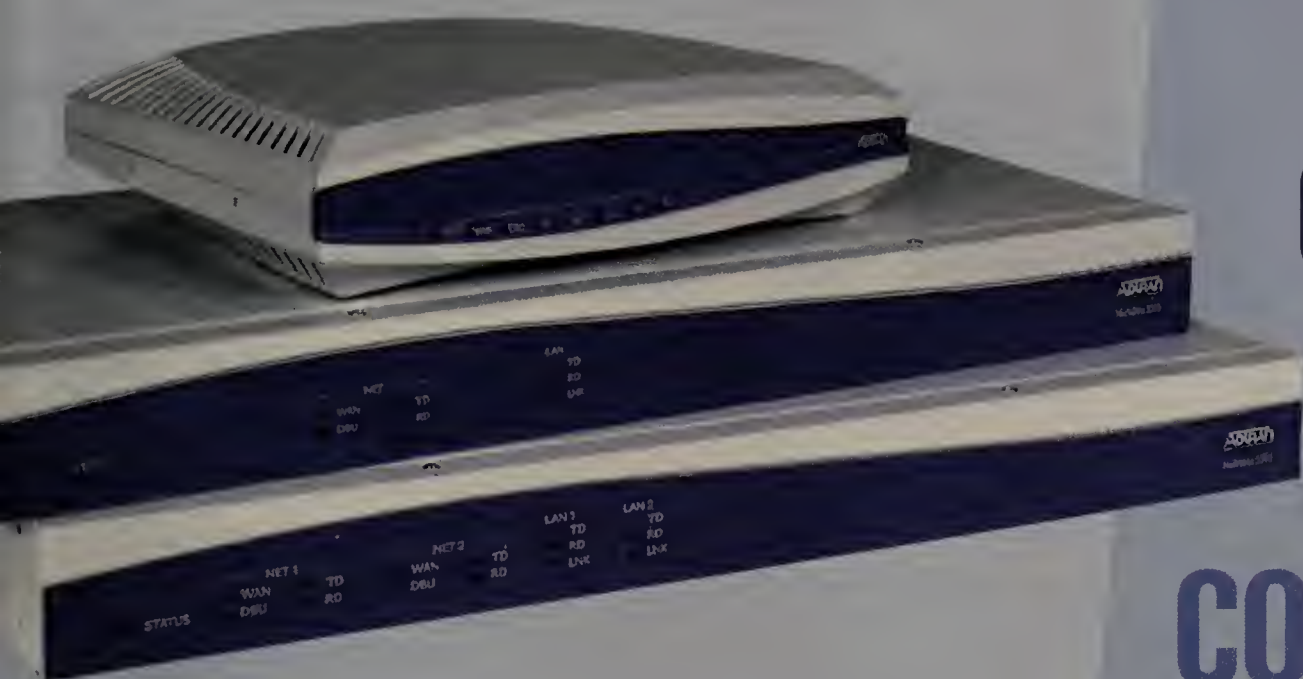
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10 most

Industry-shaping technology visions, strong financials and market domination — these network vendors stand out among all others. We rank them, 1 to 10.

BY NETWORK WORLD STAFF

1. CISCO: INFRASTRUCTURE MIGHT, NETWORK INDUSTRY BELLWETHER

Biggest announcement in 2003: True 10G switch. In April, Cisco released the Supervisory Engine 720, a module for the Catalyst 6500 family that brings these switches true 10G bit/sec performance. Before this, 8G was the max.

Financial track record:

Q1 FY '04 net income of \$1.1 billion.

Q4 FY '03 net income of \$991 million.

Q3 FY '03 net income of \$987 million.

Q2 FY '03 net income of \$982 million.

Power of numbers: No. 1 worldwide in Ethernet switching and enterprise/service provider routers. No. 14 on the Network World 200 (NW200), our annual list of the top 200 network vendors (www.nwfusion.com, DocFinder: 9035).

What's on tap for 2004? Cisco will aggressively pursue the next billion-dollar infrastructure markets — storage, security and IP telephony — via internal development and technology acquisition.

Powerful 2003 customer win: Verizon selected the 12000 Series LATA core/service edge routers to support its national IP VPN network. Terms for the deal, announced in October, were not disclosed.

Acquisitions: In January, Cisco acquired Okena, an intrusion-prevention vendor, in a \$154 million deal. In March, Cisco announced a \$500 million deal to buy Linksys, for wired and wireless consumer/small office/home office devices; and SignalWorks, for IP telephony technology, in a \$13.5 million deal. In November, it grabbed conferencing vendor Latitude Communications in a deal valued at about \$80 million.

"We will not just play defense; we will play offense as well."

— John Chambers, CEO

POWER COMPANIES

Our look at the network industry's power brokers

• Ranked 1 to 10, the most powerful network vendors

- Cisco
- IBM
- Microsoft
- HP
- Dell
- Intel
- EMC
- Verizon
- Symantec
- AT&T

See story at right.

• **2003 Company Powerometer:** An industry on the mend.

Our annual reader survey ranking vendor power. **Page 12.**



powerful companies in networking

2. IBM: A GIANT IN EVERY WAY

Biggest announcements in 2003: Mainframes, on-demand and grid. In May, IBM announced the TRex mainframe, its most powerful mainframe to date, and made yearlong additions to its on-demand IT services portfolio and grid computing applications, all of which positions it to dominate the competition for the next-generation data center.

Financial track record:

Q3 FY '03 net income of \$1.8 billion.

Q2 FY '03 net income of \$1.7 billion.

Q1 FY '03 net income of \$1.4 billion.

Q4 FY '02 net income of \$1.0 billion.

Power of numbers: No. 1 worldwide in network and system management software, relational database management systems, Java application-server software, portals and integration software, and mainframes. Plans to add 10,000 new jobs in 2004, according to CEO Sam Palmisano. No. 1 on the NW200.

What's on tap for 2004? Reorganization of its \$13 billion software division around vertical industry product sets; more on-demand, utility computing wares across IBM's hardware, software and services businesses; and component versions of its middle-ware, starting with WebSphere Application Server.

Powerful 2003 wins: In February, IBM landed a 10-year, \$2 billion outsourcing contract with auto-parts maker Visteon. In July, it convinced Lego to rip out its HP-based server and storage infrastructure and replace it with IBM products, terms undisclosed.

Acquisitions: In May, IBM acquired Think Dynamics for its automated server provisioning software; got content management tools from Aptrix in July; snagged the application porting services business of Sector7 in September, and gained mainframe database integration technology from CrossAccess in October. Terms for all deals were undisclosed.

"We are beginning to see signs that the economy has stabilized. . . . We are confident that we will benefit from both a pickup in IT spending and an economic recovery."

— Sam Palmisano, CEO

3. MICROSOFT: OPERATING THE INDUSTRY FROM THE SYSTEM LEVEL

Biggest announcement in 2003: Longhorn client operating system and surrounding technology. Microsoft bills Longhorn as the apparatus to foster an entirely new breed of computing, one defined by security, Web services and managed code. It also plans new Office suite software for Longhorn.

Financial track record:

Q1 FY '04 net income of \$2.6 billion.

Q4 FY '03 net income of \$1.4 billion.

Q3 FY '03 net income of \$2.1 billion.

Q2 FY '03 net income of \$1.8 billion.

Power of numbers: No. 1 worldwide in operating systems (with nearly 94% of client and 55% of server operating system shipments in 2002, IDC says), No. 1 worldwide in office productivity suites, and No. 3 worldwide in databases. No. 8 on the NW200.

What's on tap for 2004? Watch for news on the first Longhorn beta, as well as shipment of SQL Server "Yukon" and Windows XP SP2, Visual Studio .Net "Whidbey."

Powerful 2003 win: North Rhine Westphalia, Germany's largest state, chose Windows over Linux despite a mandate that local governments look for computing alternatives.

Acquisitions: In February, Microsoft acquired Connectix for "Virtual PC" technology. In April, it bought Web conferencing vendor PlaceWare. Terms were not disclosed.

"[Longhorn] is the biggest release of the decade, the biggest since Windows 95."

— Bill Gates, chief software architect

4. HP: HARDWARE, SERVICES POWERHOUSE

Biggest announcement in 2003: The Adaptive Enterprise. In May (on the one-year anniversary of its merger with Compaq), HP announced its version of the next-generation data center, dubbed the Adaptive Enterprise Program (AEP). Through AEP, HP aims to integrate hardware, software and services to deliver on-demand computing resources.

Financial track record:

Q4 FY '03 net earnings of \$862 million.

Q3 FY '03 net earnings of \$297 million.

Q2 FY '03 net earnings of \$659 million.

Q1 FY '03 net earnings of \$721 million.

Power of numbers: No. 1 in overall worldwide server shipments, slightly trailing Dell in the PC market; No. 1 in the worldwide external storage systems market; and No. 1 in worldwide SAN storage. Tied for No. 3 worldwide with Dell in network-attached storage (NAS), according to The Yankee Group. HP also is No. 4 worldwide in the network and systems management software market. No. 2 on the NW200.

What's on tap for 2004? Itanium. HP is re-centering itself around Intel and tackling the challenge of moving its Compaq Alpha and Tandem customers off proprietary RISC boxes and on to Itanium machines. HP recently filled out its Itanium server line, and if those products don't catch on the company could be in trouble.

Powerful 2003 win: In May, HP announced it won a \$3 billion, 10-year managed services contract with Procter & Gamble, beating out rivals Electronic Data Systems and IBM.

Acquisitions: In August, HP announced plans to acquire Extreme Logic, which specializes in Microsoft .Net applications and infrastructure. In September, it finalized the acquisition of Web services firm Talking Blocks and acquired the identity management software business of Baltimore Technologies. Terms of the deals were not disclosed.

"Infrastructure has to be able to flex with the business."

— Carly Fiorina, CEO

5. DELL: HEADED DEEPER INTO THE ENTERPRISE

Biggest announcement in 2003: Oracle 9i RAC clusters. In April, Dell CEO Michael Dell shared a stage with Oracle CEO Larry Ellison to announce these preconfigured Linux-based clusters of Dell servers, which are optimized to run Oracle 9i RAC databases. The move attempts to push Linux deeper into the data center while giving Dell (and Oracle) another plan of attack to gain market share from high-end WinTel or Unix/RISC options.

Financial track record:

Q3 FY '04 net income of \$677 million.

Q2 FY '04 net income of \$621 million.

Q1 FY '04 net income of \$598 million.

Q4 FY '03 net income of \$603 million.

Power of numbers: No. 1 in worldwide PC sales, with a narrow lead over HP, and No. 2 worldwide in server shipments, behind HP. Tied for No. 3 worldwide with HP in NAS, according to The Yankee Group. No. 7 on the NW200.

What's on tap for 2004? Dell will continue moving deeper into the enterprise with switches, storage and services.

Powerful 2003 customer wins: Kicked off the year in January with a deal for undisclosed terms that has the supermarket company Winn-Dixie standardizing on Dell servers and storage in each of its 1,060 stores. In May, Eastman Chemical standardized on Dell desktops and notebooks in a \$16 million deal. In October, Dell won a five-year managed services contract from Boeing, terms undisclosed.

Acquisitions: None.

"The push toward standards-based systems is moving higher and higher up into the enterprise. . . . Standards are the future of enterprise computing."

— Michael Dell, CEO

6. INTEL: DRIVING THE NEXT GENERATION OF TECHNOLOGY

Biggest announcement in 2003: 64-bit Itanium 2. In June, Intel rolled out the third generation of its Itanium 2 chip, code-named Madison. Systems vendors and analysts roundly applaud the chip, saying the third time might be the charm for Intel's 64-bit efforts.

Financial track record:

Q3 FY '03 net income of \$1.7 billion.
Q2 FY '03 net income of \$896 million.
Q1 FY '03 net income of \$915 million.
Q4 FY '02 net income of \$1 billion.

Power of numbers: No. 1 worldwide in CPUs for client and servers and a market share leader for an assortment of chipsets used in the creation of network and wireless gear. Maintains a \$4 billion research budget for development of many underlying network technologies and for studying areas such as social impacts, security and adaptive computing. No. 9 on the NW200.

What's on tap for 2004? Intel will continue focusing on mobile and wireless efforts, hoping to catch up with competitors in making its Centrino-powered devices capable of connecting into wireless LANs and other enterprise wireless networks. It also will try to boost its presence in the digital cellular chip market, where its market share is small today.

Powerful 2003 win: In November, Intel announced that CompUSA had deployed HP Integrity servers powered by Intel Itanium 2 processors to provide faster data access to employees in its 227 stores. It did not release contract value.

Acquisitions: In July, Intel acquired optical networking chip maker West Bay Semiconductor in an all-cash deal. In September, it acquired the high-performance computing division of Pallas, a German software development tools and services company. In November, Intel bought Mobilian, maker of integrated 802.11b/Bluetooth chips. Terms were not disclosed for these deals.

"The only people I hear who suggest that Moore's Law doesn't matter — the people who say R&D doesn't matter — are those who don't want to keep up or can't keep up."
— Craig Barrett, CEO

7. VERIZON: THE NEARLY NATIONAL RBOC

Biggest announcement in 2003: Wi-Fi for the masses. This plan, announced in May, will create 1,000 Wi-Fi hot spots in Manhattan by year-end. This has forced the hands of other RBOCs and telco operators to declare investments in Wi-Fi access in a race to control nationwide Wi-Fi availability.

Financial track record:

Q3 FY '03 "reported earnings" of \$1.8 billion.
Q2 FY '03 "reported earnings" of \$300 million.
Q1 FY '03 "reported earnings" of \$3.9 billion.
Q4 FY '02 "reported earnings" of \$2.3 billion.

Power of numbers: The largest RBOC in terms of revenue — \$67 billion in 2002. And, with 10 million long-distance customers in 47 states, it is on the verge of becoming the No. 3 long-distance carrier (achieved that for at least one quarter in 2003 and increased long-distance business by 27% since year-end 2002). No. 3 on the NW200.

What's on tap for 2004? Watch Verizon for its Wi-Fi rollout, Fiber-to-the-Premises trials and deployments; next-generation IP and optical buildouts, and push-to-

talk service to compete with Nextel.

Powerful 2003 win: Verizon gained 800 large enterprise contracts via its Enterprise Advance initiative throughout the year.

Acquisitions: None

"UNE-P is a maddening, destructive policy. . . . It does not create sustainable growth within the sector."

— Ivan Seidenberg, CEO, referring to the FCC's unbundled network element-platform rule.

8. EMC: BILLION-DOLLAR DEAL MAKER

Biggest announcement in 2003: Symmetrix DMX storage arrays. EMC launched DMX (Direct Matrix Architecture) modular storage arrays in February. The high-end storage system uses a new architecture that forgoes the switch-and-bus method for point-to-point interconnections.

Financial track record:

Q3 FY '03 net income of \$159 million.
Q2 FY '03 net income of \$82 million.
Q1 FY '03 net income of \$35 million.
Q4 FY '02 net loss of \$64 million.

Power of numbers: No. 1 worldwide in storage management software and external RAID storage while No. 2 worldwide in overall external storage, NAS and storage-area networks. No. 28 on the NW200.

What's on tap for 2004? Continued development of information life-cycle management (ILM) products.

Powerful 2003 win: In the second quarter, insurance giant American International Group purchased almost 300T bytes of EMC Symmetrix DMX networked storage, EMC Professional Services and a score of other EMC products. Contract terms were not disclosed.

Acquisitions: In July, EMC acquired Legato Systems and its ILM technology, for \$1.3 billion. In October, EMC acquired Documentum, maker of enterprise content management software, for \$1.7 billion, and Astrum, for its storage resource management software, in a deal with undisclosed terms. This month, EMC announced plans to acquire server virtualization software maker VMware for \$635 million in cash.

"We are making the strategic moves necessary to enable our customers to manage all of their information according to its value to the business at every stage of its life, at the lowest total cost."

— Joe Tucci, CEO

9. SYMANTEC: TOPS ON SECURITY SOFTWARE

Biggest announcement in 2003: Gateway Security Appliance 5400 Series. Symantec's high-speed multifunction appliance can support thousands of simultaneous user connections. This capacity gives enterprise customers a path toward new security technologies — such as intrusion detection — without having to install multiple devices (or purchase from start-ups).

Financial track record:

Q2 FY '04 net income of \$83 million.
Q1 FY '04 net income of \$68 million.

Q4 FY '03 net income of \$68 million.

Q3 FY '03 net income of \$72 million.

Power of numbers: No. 1 security software vendor by revenue worldwide, according to IDC. But it has a far smaller (2%) share in other areas such as security appliances. No. 58 on the NW200.

What's on tap for 2004? Watch for expansion beyond antivirus products into secure content management to fight spam and spyware, and support Web filtering. Symantec also will take its first steps into storage management and disaster-recovery products.

Powerful 2003 win: The U.S. Navy selected the Recourse ManHunt product for intrusion prevention on its intranet in what Symantec characterizes as the largest government deal of that nature. However, it would not disclose contract value.

Acquisitions: In September, Symantec grabbed PowerQuest, terms undisclosed, for its "active state management" technology. In October, it purchased software distribution and configuration management company On Technology for about \$100 million and Secure Sockets Layer VPN vendor SafeWeb for \$26 million in cash.

"During the recent Blaster outbreak, our Web site supported 3 million hits per hour and 1.1 million update sessions per hour."

— John Thompson, CEO

10. AT&T: SIZE AND WINNING SERVICES

Biggest announcement in 2003: The all-IP core. In October, AT&T mapped out plans to ditch its circuit-switched network for packet technologies such as Multi-protocol Label Switching, and the high-margin services an all-IP core will allow, such as managed voice over IP and VPNs. AT&T will spend nearly all its 2004 capital expenditure budget (about \$3 billion) on the migration.

Financial track record:

Q3 FY '03 net income of \$418 million.
Q2 FY '03 net income of \$536 million.
Q1 FY '03 net income of \$571 million (based on new reporting methods begun for Q1).
Q4 FY '02 operating loss of \$280 million.

Power of numbers: No. 1 telecom carrier in the U.S. in revenue and number of customers. No. 6 on the NW200.

What's on tap for 2004? AT&T will continue emphasizing its business services group, under new leadership, and try to reverse three years of flagging revenue by bringing in lucrative services contracts. Also expect the carrier to continue expanding its local network to reduce dependency on the regional Bell operating companies — and ultimately reduce its local-access expenses.

Powerful 2003 customer wins: AT&T grabbed several multi-million-dollar federal government contracts. These include a \$180 million deal, announced in March, to manage the Internal Revenue Service's toll-free services and a \$76.6 million agreement, landed in May, to manage the data network for the Centers for Medicare and Medicaid Services.

Acquisitions: None.

"The next 12 to 18 months promise a further shakeout and rationalization. While there will be fewer players, AT&T will not only survive, but thrive."

— David Dorman, CEO



Well, I was hoping to wear this new suede jacket I just bought, so I'm just kind of keeping my fingers crossed that it doesn't rain today.

AVAILABLE AROUND THE GLOBE

IT guy has time to chat

Greg Brown, 33, seen talking freely to co-workers after deploying Nokia Message Protector

"I used to spend most of my day managing all kinds of different security products like anti-virus and spam rejection for our email system," a beaming Greg told reporters at a recent IT industry seminar. "Trying to plug holes between our desktops and gateways, looking after all those scanning technologies, trying to keep them updated — all of that kept me in the trenches. But it changed with the implementation of Nokia Message Protector. Now that we have secured communication paths, spam protection and intelligent updates, I can come out of my bunker and get to

all the names of the people in the Finance Department, and some of them are quite cool — I even go to the staff cafeteria at lunch sometimes now. The food's quite boring, but the people I have met are great. It's terrific," was his response to one reporter's question about the automatic signature update feature. "My boss

exploit updates, but now I can reassure him, and he can focus on other things. Trying to plug holes between our desktops and gateways, looking after all those scanning technologies, trying to keep them updated — all of that kept me in the trenches. It changed with the implementation of Nokia Message Protector. My boss had been worried about delays in getting the latest updates, but now I can reassure him and he can focus on

Introducing Nokia Message Protector.

Nokia has created a complete purpose-built appliance that integrates innovative security technologies including virus protection, with unique Nokia filtering software — known as statistical protection — to deliver new levels of enterprise email security. Nokia Message Protector deploys in minutes and provides secure, automatic updates to optimize email



system integrity. With the ability to process up to 120,000 emails per hour, and the intelligence to control the content that enters, flows through and leaves your network, you can spend more time doing things that matter — like getting to know your colleagues! If you'd like more time to chat, visit www.nokia.com/get_a_life/americas

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2003 COMPANY POWEROMETER

An industry on the

In our annual survey, readers rate Cisco tops in power while finding the network industry back on a healthy track.

BY JULIE BORT

Cisco edged out Microsoft as the most powerful company in the network industry, according to 250 readers who participated in our annual Powerometer survey. This is only the second time in this survey's seven-year history that Cisco snatched the top spot from Microsoft, the first in 2000.

HP, too, boomed in power this year, as did Dell, while Sun spiraled down.

Overall, six out of the 20 (or 30%) vendors in the survey have maintained their relative power positions this year over last, while another seven vendors have grabbed power and seven (35%) have given it up (see "How we did it," right). For instance, Intel and IBM retained their No. 3 and 4 positions, respectively, as did AT&T at No. 8, Sprint at No. 15 and BellSouth at No. 17. Interestingly, MCI — last place again this year — achieved the survey's highest boost in year-over-year Power Ratings, a 9%

jump to 40 from 36.7 in 2002. This places it a mere one-tenth of a point behind No. 19, Novell. With the debt from its record-breaking bankruptcy all but wiped away, a name change (from WorldCom), and a respected, new CEO, MCI has its fist raised and ready for a post-bankruptcy fight to win business.

HP increased its power position the most, rising three spots to No. 6. True, SBC also climbed three spots, but HP did so while slightly increasing its year-over-year Power Rating, too (to 56.6 from 56.0 in 2002). SBC's Power Rating, on the other

hand, lowered slightly (to 47.5 from 47.9). HP owes its heft in influence to its speedy integration of Compaq and its leading positions in utility computing and other next-generation technologies.

Dell also experienced a big power boost, breaking into the top five for the first time. Verizon is another vendor coming on strong. Almost one-third of respondents named it the datacom vendor best positioned to grab power in 2004.

On the downside, Sun dropped to No. 9 from No. 5 in 2002. Its ongoing anemic financials and market pressure from vendors with less-expensive, Linux-based machines are to blame.

Still, signs of industry confidence outweigh such individual declines. Almost two-thirds of respondents "agree" or "strongly agree" that the network industry's overall power has increased in the past 12 months, when compared with other industries. ■

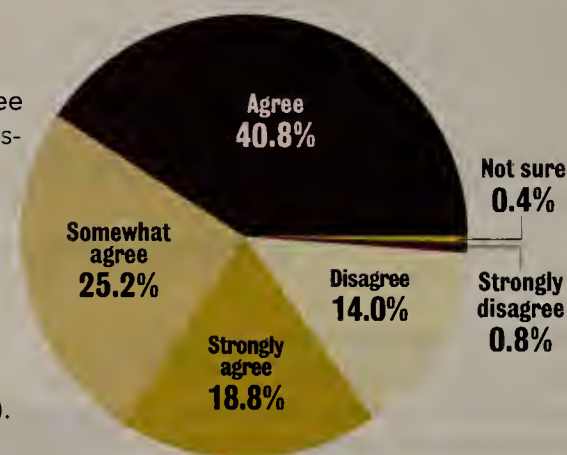
2003 POWER RATING

Using a scale of 1 to 100, with 100 representing the high-power mark and 1 the low, 250 readers quantified the power of 20 vendors. Five companies earned higher Power Ratings in 2003 (while none increased power in last year's survey).

Rank 2003	Rank 2002	Company	Power Rating 2003	Power Rating 2002	Change%
1	2	Cisco	73.9	73.8	0.1%
2	1	Microsoft	73.6	74.5	-1.2%
3	3	Intel	64.5	66.3	-2.7%
4	4	IBM	63.6	63.2	0.6%
5	7	Dell	58.7	57.6	1.9%
6	9	HP	56.6	56.0	1.1%
7	6	Oracle	56.1	58.8	-4.6%
8	8	AT&T	54.7	57.4	-4.7%
9	5	Sun	52.2	59.3	-12.1%
10	11	Verizon	51.9	52.6	-1.3%
11	12	Nortel	51.2	52.2	-1.9%
12	10	3Com	47.6	52.8	-9.8%
13	16	SBC	47.5	47.9	-0.8%
14	13	EMC	47.2	51.1	-7.6%
15	15	Sprint	45.9	49.5	-7.3%
16	14	Computer Associates	45.1	50.7	-11.0%
17	17	BellSouth	44.0	47.5	-7.4%
18	19	Qwest	42.3	42.9	-1.4%
19	18	Novell	40.1	46.6	-13.9%
20	20	MCI	40.0	36.7	9.0%

A POWERFUL INDUSTRY

Most of 250 Powerometer respondents agree the network industry's power has increased in the past 12 months compared with other industries (such as energy accounting and financial services).



POWER WINNERS AND LOSERS

These companies gained or lost the most power in 2003.

Company	Change in 2003 Power Rating	Rank change over 2002
MCI (formerly WorldCom)	9.0%	none
Dell	1.9%	+2
HP	1.1%	+3
Novell	-13.9%	-1
Sun	-12.1%	-4
Computer Associates	-11.0%	-2
3Com	-9.8%	-2
EMC	-7.6%	-1

HOW WE DID IT

With the help of market researchers Research Concepts, we asked 250 readers to rate the power of 20 network vendors and their CEOs. We used a scale of 1 to 100, with 100 representing the high mark and 1 the low. We calculated the mean to obtain the "Power Rating."

Power Ratings analysis provides two key measures of power: objective and relative. Objective power is determined by comparing a company's or individual's current Power Rating against last year's, which shows how the CEO's or company's own power has altered. Using the Power Rating to rank the companies from 1 to 20 lets us compare vendors against each other. Respondents might perceive a company to be less powerful than it was last year, yet gaining industry power overall. For instance, Nortel's Power Rating dropped one full point from its 2002 rating, yet the company climbed one rank to No. 11 in 2003, from No. 12 in 2002.

— Julie Bort



Forward

Today's MCI is now the world's most connected Internet network.

Today's MCI is leading the way with satellite broadband access.

Today's MCI offers global connectivity through the MCI network.

Today's MCI is the first national carrier to offer unlimited local and long distance phone service, with over two million residential subscribers now, and growing by the day.

Today's MCI is always looking forward to tomorrow.

And tomorrow's MCI will always do just the same.





POWER OF TECHNOLOGY
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Award

WaMu



Nabil Badr (left) and Mike Spalter, executives with the Washington Mutual infrastructure services team, took a shot at building one of the country's largest enterprise Multi-protocol Label Switching networks — and won big time.

banks on MPLS

2003 User Excellence Award winner Washington Mutual powers up for rapid expansion with a massive Multi-protocol Label Switching network.

BY TERRY SWEENEY

Bankers as a group tend to be risk-averse. So in June 2002 as Washington Mutual moved toward finalizing contracts for a huge Multi-protocol Label Switching-based network, CIO Jerry Gross was getting nervous.

The nation's seventh-largest bank was poised to commit millions to the project, a gamble of sorts on a technology used more by big carriers than corporations. In fact, WaMu wanted MPLS for the same reasons a Tier 1 ISP does — it scales readily; segments easily, with connections and teardowns handled automatically; and handily accommodates big surges in demand, says Nabil Badr, the company's resident protocol genius, who architected the network.

Confident as Gross might have been about his backbone choice, he was worried about

the stability and viability of the primary carrier with whom he was negotiating — MCI, then known as WorldCom. With word on the street putting MCI in deeper financial trouble than its executives were letting on, Gross flew to the carrier's New York headquarters for assurances. Over dinner, then-CFO Scott Sullivan convinced Gross that the rumors surrounding the carrier were baseless and that everything would be fine.

So Gross was probably more shocked than most when, less than a week later while watching CNBC in his Seattle office, he saw

law enforcement officials leading Sullivan away in handcuffs. "I've been involved in some white-knucklers in all my years in business, but this one took the cake," Gross says. It didn't help that soon after WaMu Chairman Kerry Killinger stopped by Gross' office to ask, "How you feeling this week?"

With MCI in such dire straits, Gross needed to get even more pragmatic and contingency-minded than he had been regarding this massive network overhaul. Gross and his network staff still believed that the carrier was the best in the business to provide MPLS. ISP UUNET, acquired by MCI, pioneered the technology in the 1990s. It uses MPLS to run its own massive IP backbone, which comprises much of the public Internet.

So rather than ditch MCI in favor of AT&T or another carrier as the primary service provider, WaMu structured its MPLS contracts assuming MCI would go broke and cease operations. That is, it spelled out terms for shunting all WaMu traffic on MCI's backbone to back-up carrier AT&T. The MCI and AT&T contracts also contain such unique terms and conditions as the ability to change the mix of services without penalty at any time, Gross says.

The financial services company had plenty of incentive to get this MPLS project right and minimize risk. WaMu's business spans consumer banking, mortgage lending and insurance in the U.S., with assets totaling more than \$286 billion. The MPLS network, connecting 3,000 locations and the 60,000 people who work at them, would help fuel unprecedented business opportunities. WaMu, for example, relied on the MPLS network in opening 32 bank branches in Chicago in one day in August — a figure of which the company is justifiably proud.

"Our network takes shocks like adding that many branches, and still the needle stays on 'normal,'" Badr says. "MPLS can take it."

WaMu wins the 2003 User Excellence Award for successfully undertaking this massive enterprise MPLS deployment to meet the company's rapid and widespread expansion, while significantly boosting the efficiency of day-to-day operations. Conservative cost

See WaMu, page 18

Beyond MPLS

Washington Mutual upgrades desktops while rolling out its massive new enterprise backbone.

While building a new network infrastructure for 3,000 locations is enough to keep most companies busy, Washington Mutual threw in a simultaneous rollout of Windows XP to 60,000 desktops.

Easier support and, over time, lower costs are among reasons the Seattle-based nationwide financial services company is standardizing on one desktop operating system, says Mike Spalter, team leader of WaMu's Infrastructure Services Group. At one point, he notes, WaMu supported more than six desktop operating systems, including 18,000 workstations on IBM's OS/2 and applications using that vendor's chunky Presentation Manager GUI, and three different e-mail systems. WaMu did not have automated software distribution or common patch management, anti-virus protection or common messaging, Spalter says.

Armed with necessary software,

Spalter's team converted 3,000 desktops to XP per week, in a combo on-site/remote management assault. That equates to 25 sites per night, six days per week. "I have to give a lot of credit to the team and how they met the challenge," he says. "We had a lot of checkpoints to make sure we were on the 'happy path.'"

Next up: Standardizing on an operating system for its servers. WaMu has yet to decide exactly which operating system that will be. "I decided not to touch the servers before getting a common protocol stack in the PCs and a stable network," Spalter says. The server upgrade will take three years, the bulk of it taking place in the next 18 months.

WaMu also will consolidate servers as part of a regular "refresh" cycle that surveys server usage and performance, including the WaMu data centers.

— Terry Sweeney

POWER OF TECHNOLOGY

A show of how network technologies are empowering the enterprise

The 2003 User Excellence Award

The User Excellence Award, in its 19th year, honors user organizations that demonstrate exceptional use of network technology to empower the enterprise. Winning projects show how mainstream technologies can be applied creatively or how newer infrastructure technologies can solve pressing business problems. They create great business cases, showing how technology leads to big savings, new opportunities or demonstrable productivity gains. 2003 award recipients are:

Washington Mutual.
See story this page.

New York State Workers' Compensation Board, runner-up.
Page 20.

Honorable mentions.
www.nwfusion.com,
DocFinder: 9039.

Early adopters

Find out how some companies are taking advantage of three developing technologies:

Wireless LAN switching. Page 24.

Real-time collaboration tools. Page 28.

Business-process automation software. Page 30.

Windows Servers and Networked Storage is No Longer Out of Reach

❖ Brian Babineau, Research Analyst

As more and more people talk about how IT can help the business by managing information life cycles, IT tends to stray from the fundamentals. Information management and protection are baseline tasks that must be accomplished before anything else can be done. In the Windows world, these two tasks are usually done on a server-by-server basis. This is not an easy task for anyone involved and it surely does not make anyone's life easier. Given the prevalence of Microsoft's operating systems and the increasing reliance to run mid-tier, business critical applications on them, IT must start using some new tools to get the basics of data management and protection under control. Only then should IT start getting fancy with Information Lifecycle Management (ILM)-type projects.

If your ultimate goal is ILM and you want to do it with your Windows based servers, you should get these three steps right. First, networking these servers to centralized storage is essential. This process has already begun with Networked Attached Storage (NAS). Now, with the addition of iSCSI, there is no excuse for islands of storage or direct-attach storage (DAS) on Windows servers. Second, automate storage management tasks such as configuration and allocation. This will increase utilization and help you better manage your networked storage resources. Finally, protect your data. IT is responsible for all information assets, regardless of how they are created or where they reside. When storage is networked and configured appropriately, data protection becomes less complex.

STEP 1

No More Excuses, Network Your Storage

It is an easy decision for IT to hook up large servers running critical database or transaction systems to a Fibre Channel Storage Area Network (SAN). The performance, scalability, and management benefits are tangible enough to justify the infrastructure costs. When it came to smaller servers, especially Windows, a SAN just did not make sense. For these servers, Direct Attach Storage (DAS), storage captive to the server, remained the most efficient and economical decision for IT. The problem is these small servers are no longer "small" when it comes to storage capacity. Drive sizes have increased and now managing and protecting the data on these drives is not a simple task.

Within any organization, ESG estimates that the aggregate capacity of these small servers with DAS, is four to five times larger than that of capacity

attached to a SAN (or similar networked environment). It is now necessary to connect all these small servers up to a central storage device. Why? It centralizes data management and protection. Resource utilization will increase and you only have to back-up one storage device as opposed to several servers. There are very few reasons not to network these smaller servers, especially with iSCSI. If you are like most, you have some mid-range Windows servers in your data center, and these are perfect candidates for iSCSI. With iSCSI, IT can leverage an existing IP network to connect multiple servers to a single storage device. Microsoft, similar to other networked attached storage (NAS) vendors, has made the drivers available at no cost. Its time to network your Windows environments, as the benefits are tangible and costs are no longer prohibitive.

Information management and protection are baseline tasks that must be accomplished before anything else can be done.

STEP 2

Simplify Management

Networked storage means there is no longer a 1:1 ratio between storage and server. Centralized storage means a single point of control for management. However, configuring the storage and managing the physical devices are still complicated. Currently, many of these tasks are done with tools provided by hardware vendors and are storage system centric. It is widely accepted that each hardware vendor, regardless of class of storage, are most familiar with its own products and therefore can configure and manage them better than anyone else. What these system vendors forget is that IT just cannot worry about the storage side of the information infrastructure. There are servers that need to access the data and require their own setup and management. This overlooked principle is more evident in the mid-range storage market where there are many more flavors of hardware.

Some software vendors provide volume and file system management. Bringing storage management and data protection to operating system level where the file system is created was the next challenge. To that end, Microsoft introduced Virtual Disk Service (VDS) with Windows Server and Windows Storage Server 2003. VDS allows IT to view all the storage devices that it attached to the server. IT can configure the devices, set up RAID protection, and secure storage resource by masking volumes or disks from individual servers. VDS also provides some rudimentary performance and system health monitoring. These are plain vanilla features, but will help ease the pain for connecting Windows based servers to centralized storage devices. The biggest benefit is that the system vendors or other storage software applications can be integrated with VDS allowing IT the ability to manage information from both a server and storage perspective.

STEP 3

Always Protect Your Data

A recent ESG survey revealed 56% of enterprise (company revenue of \$500M+) and 46% of mid-tier (company revenue up to \$499M) users are concerned that their backup schedule leaves data exposed. Two-thirds of all the respondents stated that the backups take too long. These two data points confirm that data protection is still a difficult task to manage despite all the technology advancements in the storage industry. The underlying cause is that the amount of information being stored is increasing, and that information needs to be protected.

The problem is that current backup processes are focused on the "mission critical" systems. The mid-tier applications, associated servers and storage are often low on the backup priority list. The primary reason being it was too hard to backup individual servers and storage. Networked storage and central management solves that problem. The next challenge is to formulate a data protection process for these environments. Many vendors offer some form of snapshot and or full copy software. But, similar to the storage management dilemma, there is very little attention paid to the host or operating systems. To solve that issue, users can take advantage of Microsoft's Virtual Shadow Copy Service (VSS). VSS enables full clone and snapshot copies of files, filesystems, and volumes on the server. Information can easily be restored, and with copy-on-write functionality, the backup copy is assured of being consistent with the original data. IT can use the VSS technology in conjunction with other replication products to increase the scalability of the backup process. Data protection is not an operating system, server or storage function, it is all of them. IT can now take advantage of the integration done by the representative vendors to protect as much information as possible.

Summary

While ILM is the new industry buzz-term, most Windows environments are behind the curve because IT needs to get the fundamentals right. There is no sense in putting the cart before the horse. Getting the basics right will provide economies and efficiencies not yet realized in the Windows storage world. The aforementioned steps will help you take action and, the new features available in the Windows Server 2003 and Windows Storage Server 2003 facilitate storage networking, management and protection. Ultimately, the business applications, such as Exchange and SQL Server that run on the Windows platform, as well as those who use them, will benefit.

There is no sense in putting the cart before the horse. Getting the basics right will provide economies and efficiencies not yet realized in the Windows storage world.

For more information on Network Storage Solutions and the Enterprise Storage Group, go to:
www.enterprisestoragegroup.com

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WaMu

continued from page 15

estimates for such a large-scale MPLS deployment range in the tens, if not hundreds, of millions of dollars. While WaMu officials won't divulge budget information, they did verify that first-year ROI was a 25% reduction in IT operational costs, a figure they forecast will remain constant over the next three years.

Company at a crossroads

While few companies can warrant such a massive network overhaul, WaMu was at a crossroads. Gross describes the situation he encountered his first week at WaMu, in August 2001: Intranet pages took three minutes to load; the network went down a lot, but no one could explain why; and remote connectivity was so bad that he opted to use Hotmail when working at home rather than try to access the corporate e-mail server.

Then consider the thousands of bank tellers trying to get account information, or the multitudes trying to close on the best interest rate, or the financial services company's inability to handle its own internal business processes. Applications had been developed and then shelved because the data infrastructure couldn't support them. Long outsourced to IBM, that data infrastructure had been intended to support nothing more than general office applications such as file serving, e-mail and accounts payable.

Part of the problem was that the old network couldn't scale enough to meet WaMu's rapid expansion — an acquisition binge started in the late '90s wrapped up with purchases of three financial institu-

tions in the past year. In the past six years, the number of WaMu employees more than doubled from 27,000 to 60,000. The number of locations also more than doubled, to 3,000 nationwide.

"It was a burning platform," Gross says. "There was a basic need for a scalable, stable, hardened network that could support WaMu's growth."

And although WaMu has scaled back acquisition plans, continued growth there would be. The company planned to open as many as 300 financial centers through 2004. WaMu was willing to prioritize IT spending on a companywide data network that would span local, metropolitan and wide areas — and eventually voice and wireless data traffic. Plug and play of new sites was an imperative, given the company's growth projections.

"MPLS was the choice for flexibility and scalability, which makes for a better total cost of ownership," says Badr, noting the company also considered fully meshed hub-and-spoke and ATM-based backbones.

And so WaMu created a six-tier architecture using the MCI and AT&T services and network gear from Cisco and Juniper.

The new LAN architecture provides 75,000 Ethernet ports (a mix of 10M, 100M and 1G bit/sec links) at branch banks, financial centers, home loan sites, corporate office buildings and for automatic teller machines. Each WaMu site connects to one of multiple metropolitan-area networks (MAN) for connectivity to the WAN. A WaMu-developed node, called a supercore, further consolidates MAN traffic across any of three different SONET OC-3 lines, which operate at 155M bit/sec. From the supercore, traffic passes onto any one of nine MPLS nodes, which in turn collapse into a three-node backbone. Back office, system-to-system and dial back-up layers round out the six-tiered WaMu network (see sidebar, "Tiered MPLS").

Design and testing began in the fall of 2002, with implementation following through this year.

Supercore to the rescue

WaMu holds network specifics close to the vest, not willing to share too much information for competitive reasons. But Mike Spalter, team leader for WaMu's Infrastructure Services Group, did explain how the company ensured such a smooth roll-out. WaMu partitioned the supercores from each other and from the rest of the network until they were certain each was stable, he says.

Also critical was teamwork among WaMu's IT staff and the MPLS players. Spalter describes 60-person meetings at which all the vendors were represented so blame couldn't get shifted and everyone could agree on cooperative action. Offloading a lot of responsibility to its vendors helped WaMu achieve a "remarkably" smooth and quick implementation, the IT folks say.

To ensure the network continues operating seamlessly, WaMu holds monthly quality

Tiered MPLS

Washington Mutual divided its Multi-protocol Label Switching network into these six layers:

1. Metropolitan-area network: Each of WaMu's 3,000 locations feed LAN traffic into one of multiple MANs. Connectivity from MAN to MAN is achieved using dense wave division multiplexing and SONET ring technologies.

2. Supercore: A supercore provides a gateway for handoff of MAN traffic into the wide-area MPLS network. Supercores connect to the MCI network for primary service via two SONET OC-3 (155M bit/sec) trunks and to back-up carrier AT&T over a single OC-3 circuit. With each of these consolidated nodes, WaMu can partition the MPLS/WAN backbone to make upgrades, to contain security breaches, and to activate new sites without affecting overall performance of MPLS and desktop traffic.

3. MPLS/WAN backbone: MCI-based MPLS network handles supercore-aggregated traffic and consists of nine nodes that collapse into a three-node backbone.

4. Access layer for business partners. WaMu provides MPLS partners AT&T, Cisco, Juniper and MCI access to back-office systems running administrative, billing and management applications. This layer is firewall-protected.

5. Disaster-recovery layer. Details largely undisclosed, but this layer provides excess capacity, backup and storage in the event of network failure.

6. Dial back-up layer/ISDN: Provides a connectivity option should the MPLS network or MCI's infrastructure as a whole go down.

How MPLS works

Washington Mutual turned to Multi-protocol Label Switching because it would easily handle the firm's growing data traffic requirements while letting it offer bandwidth priority and guaranteed service levels to specific users, applications or IP addresses.

In order to do so, MPLS switches and routers assign labels to packets entering the network. These labels contain information describing the packet's origin, destination, required bandwidth, delay sensitivity and IP headers, among other characteristics. The MPLS switches then build a path for the label, sending it on its way. The switch then either tears down the path or retains it for any anticipated traffic exchange, flagged by the label.

Routing by label, rather than packet, makes it possible for MPLS switches to steer IP traffic onto a variety of routes rather than the single path allowed in traditional switched and routed networks. The switches use this label system to avoid congested or failed paths, and to meet guaranteed service levels.

Go to www.nwfusion.com, DocFinder: 9033, for more information on MPLS, including a step-by-step diagram.



Project tips
A year into the network build-out touching 3,000 locations, Washington Mutual CIO Jerry Gross shares this advice:

- Leverage, streamline, improve. Repeat.
- Don't single-source anything, especially if you're a large company.
- Create incentives and processes that ensure lots of intervender cooperation with no finger-pointing or responsibility shirking.
- Measure performance at as many levels as possible; measure regularly to form the basis of ongoing vendor quality improvement processes.
- In your vendor contracts, insist on and provide very specific language in terms and conditions for contingencies such as bankruptcies, network failures and service mix.

improvement meetings during which vendors present their network statistics in front of each other. This format, Spalter says, introduces an even higher level of accountability and spreads the risk around. "It gives the frontline vendors the tools they need to manage the back office," he says.

WaMu and its carrier partners manage the MPLS network from three network operations centers (NOC) — one each owned and operated by WaMu, MCI and AT&T. All the major vendors and service providers have full-time staff working in WaMu's NOC.

Leveraging the infrastructure

Gross and the network team are under no small pressure to leverage the MPLS backbone. And while it's not a front-burner action item, WaMu is looking at the MPLS network as a means to handle voice-over-IP traffic across the corporation and to be

able to create virtual call centers rather than invest in physical infrastructure for customer service. Gross also sees the MPLS backbone as a means to tie local wireless LANs to the MAN and WAN, and even broadcast interest rate changes to bank customers or inform them of other market news.

But for now, Gross and his team have their hands full. The good news is, what looked like a huge risk in June 2002 already has begun paying off for WaMu.

"Downtime is all but gone," says Gross, citing a network uptime statistic of 99.997%, up from 97% when he joined the company. "And we can deploy new capabilities much faster. Our operational excellence wouldn't be possible without IP applications. How do you calculate the cost of not having an intranet — millions of dollars? MPLS has transformed how we grow and how productive we are." ■

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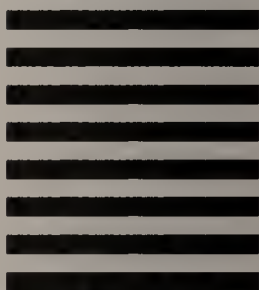
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Virtual call center to the rescue

The New York State Workers' Compensation Board wins User Excellence Award runner-up for going virtual and greatly enhancing customer service.

BY TONI KISTNER

One of the first calls employees injured on the job make is to the state workers' compensation board to initiate benefits claims for coverage of medical bills and replacement of lost wages. But New York workers making that call before 2001 were likely to suffer insult on top of injury: Customer service was abysmal.

Even though the New York State Workers' Compensation Board (WCB) had digitized all its paper files, customer service was a mess. Each office had its own setup — some a few dedicated lines, others a Centrex system, still others gear from Lucent or Nortel. No more than three customer service representatives staffed each office, regardless of incoming call volume. In some offices, call volume was light and reps didn't have enough to do. In others, calls streamed in non-stop. "A significant number of calls got busy signals, and callers faced long wait times," says John McDermott, IS director for the WCB. The board receives approximately 1 million calls per year from injured workers and other stakeholders in the workers' compensation system.

Virtual call center technology, still nascent in 2000 when the WCB began investigating fixes for its customer service problem, seemed a viable option. The WCB's earlier decision to eliminate

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paper files turned out to be a boon. "If our case files hadn't been computerized, we couldn't have [pursued a virtual call center]. This means everybody can look at all the case files, regardless of location," says Joanne Conrad, assistant director of claims operations at WCB, noting that all claim-related documents, including medical forms and letters, are scanned into an electronic folder.

The WCB found the virtual call center idea attractive compared with the more traditional approach of building a centralized call center, which would have required construction funding and relocating or laying off dozens of reps, then hiring and training new reps in the area. A virtual

call center, on the other hand, would let the WCB tie its district and satellite offices into a centralized phone system and let its existing staff of reps work as a single unit. They would take calls based on availability and appropriate skills, not geographic location, thereby evenly distributing call volume and allowing more consistent customer service. And the cost, at approximately \$900,000 for hardware, software and consulting services, would be significantly less than a project involving new construction.

The New York WCB earns 2003 User Excellence Award runner-up distinction for embracing emerging virtual call center technology — and a new way of working — while potentially saving millions of dollars.

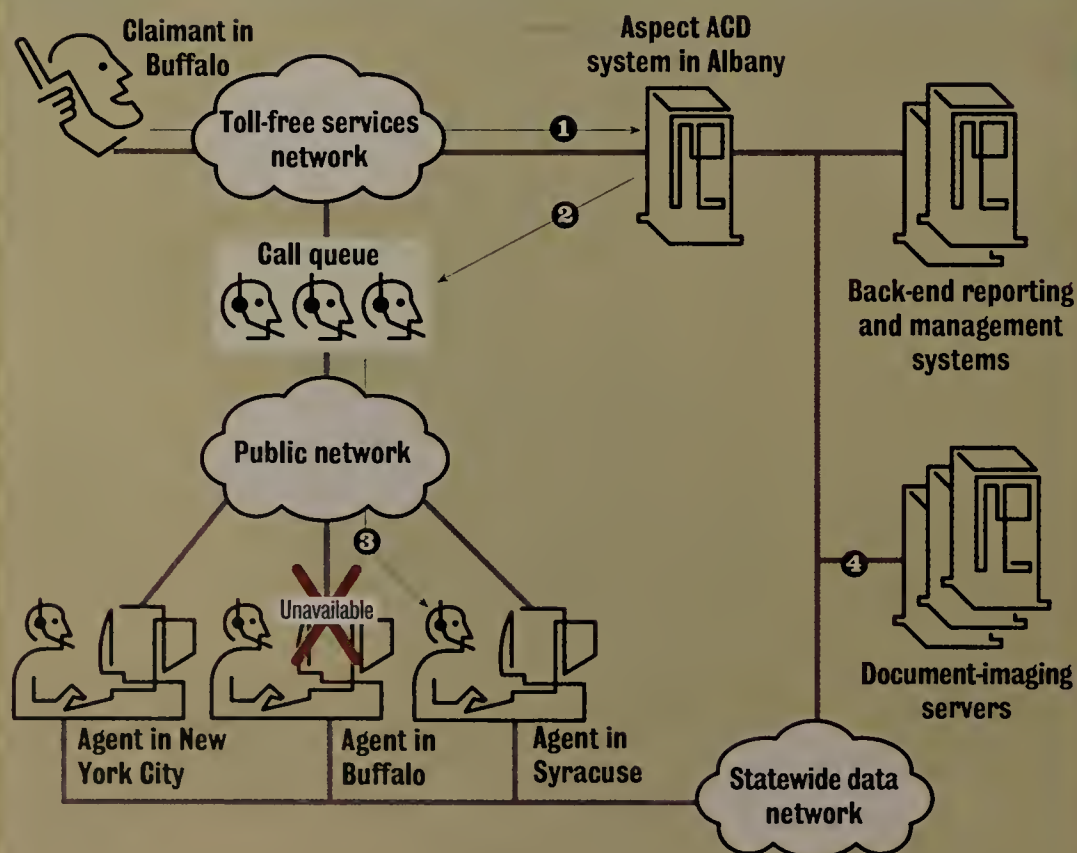
Rollout under duress

Although the agency clearly understood the business case and benefits of a virtual call center, some feared the reps and their managers would have trouble adjusting to such a radical new way of working. Those concerns became moot on Sept. 11, 2001. The terrorist attacks disabled the WCB's district offices in New York City, forcing McDermott and his team to forward calls to outlying offices. Overnight, his organization

See Compensation, page 22

Claims processing, New York-style

- 1 Callers from any region get routed to a central automatic call distribution (ACD) system, which prompts them to specify services required.
- 2 The ACD system forwards the calls to agents who have appropriate skills for handling services required, based on up-to-the-minute agent status.
- 3 The ACD system looks first to in-region agents and, if none are available, routes the call to out-of-region agents.
- 4 Customer service agents access a network document-imaging application for information and correspondence on all cases.



A virtual call center saved customer service at the New York State Worker's Compensation Board. Clockwise from far right: John McDermott, Joanne Conrad, John Bell and Nancy Mulholland.

> 5:05 am. Custom configuration expert Henry Young trains for the mother of all last minute orders.

A photograph of a man, Henry Young, sitting at a desk and solving a Rubik's cube. He is wearing a dark CDW sweatshirt. The desk is cluttered with several other Rubik's cubes in various states of being solved. In the background, there are bookshelves filled with books and a small vase. The overall scene suggests a dedicated professional working on a complex task.

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Compensation

continued from page 20

was faced with rolling out the virtual call center system to district and satellite offices

as quickly as possible and processing more than 9,000 workers' compensation claims related to the attacks.

To handle that crisis, the WCB quickly leased an Aspect Communications' auto-

matic call distribution (ACD) server and installed it at the data center in Albany, and deployed Aspect WinSet software on the reps' computers. At the same time, it changed (and forwarded) the local phone

numbers of each district and satellite office to a single toll-free number. Since then, McDermott's team has added offices to the virtual call center one at a time, with one office bouncing calls to another until the last of the 11 districts and 30 satellite offices came online in September 2003. The WCB currently receives between 50,000 and 60,000 calls per month through the virtual call center; call-handling is going so well that the board recently brought two additional departments onto the system, he says.

When reps log on to their computers in the morning, they enter their phone numbers into the WinSet application. WinSet talks to the ACD system, letting it know when reps are available to take calls at what numbers, when reps are on their phones and when they are in wrap-up mode, handling paperwork after call completion. The ACD distributes incoming calls to the offices based on availability or customer service rep skills. For example, calls from Spanish speakers are routed to the district offices in New York City.

The call center manager can view and monitor all call activity. Reps manage all calls via their workstations; the analog phone simply carries voice traffic.

Operational gains

The virtual call center benefits are numerous. For callers, busy signals and long wait times are gone, as 98% of calls are now answered within 30 seconds, McDermott says. For reps, burnout from long hours and verbal abuse from irate callers have dissipated. For the state, the virtual call center has meant increased interaction with constituents without an increase in staff — "extremely important" given the state's hiring freeze, McDermott says.

Beyond getting the phones answered, the WCB's quality of customer service is improving, too. "Our responses are becoming more consistent," McDermott says. "When one person calls the Buffalo office and another calls one in New York City, we're now more likely to give them the same answer. Before, the data ranged because every district had its own. We didn't have FAQs or the ability to monitor phone calls to better manage interaction with claimants. Now we do."

The new system also is helping the WCB improve internal processes, including how reps and case managers interact. Now, reps can field routine questions that used to go to case managers, forwarding only the most appropriate calls to them. Case managers, in turn, can concentrate on claim resolution.

With the virtual call center fully deployed, the WCB can take customer service to the next level, McDermott says. "We have the ability to tap into resources, to open more channels to our customers and claimants. We're working now on a knowledge database to help answer calls, and I'd like to see us coordinate the phone with the Web," he says. "In many ways the state is behind, but on the technology side, we're on the leading edge of things." ■

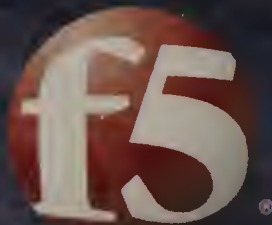
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Wireless wonders

Wireless LAN switches solve many of the problems once associated with WLANs and make supporting mobile users a cinch.

BY MARY PETROSKY

If indispensability is a measure of a technology's maturity, then wireless LANs have moved into their teen years, aided by the arrival of WLAN switches from companies such as Airespace, Extreme Networks and Trapeze Networks. With many mobile users now depending on wireless connectivity for anytime, anywhere network access, and demand growing daily, net executives increasingly are turning to these new switches to get past the shortcomings of first-generation WLANs — weak security, lack of roaming support, and high planning and support costs.

IT managers at San Antonio Community Hospital (SACH), Santa Clara University (SCU) and the School of Electrical Engineering and Computer Sciences (EECS) at University of California, Berkeley, relate how second-generation WLANs are enabling easy wireless expansion. With switch-based WLANs, they get the management tools they need to grow their WLANs without increasing IT head count.

SACH, an independent hospital in Upland, Calif., expects to save between 70% and 90% over other wireless systems in design, operations and labor costs by using the management tools available with Trapeze's Mobility System, says Jan Snyder, senior telecommunications consultant. SACH uses WLANs in the emergency room and hospital lobby for streamlined patient admittance processing, and in the emergency and operating rooms for viewing radiology images on mobile PCs.

Because WLAN switches make a wireless infra-

structure easy to deploy and manage, Snyder is expanding the WLAN to more areas in the hospital with an eye toward further streamlining hospital operations and improving patient care. He's also rolling out new wireless applications, including voice. For example, doctors will get wireless phones or PDAs with soft phones and nurses will have voice-activated, "necklace-style" wireless phones so they can talk to each other in real time. Eliminating telephone tag will facilitate patient care and allow for a higher nurse-to-patient ratio.

An answer to user prayers

Like doctors and nurses, students and teachers are highly mobile users. While they can find wired ports in most locations within a university, they don't want to carry cables around with their laptops and PDAs and hunt for wall jacks, says Ron Danielson, CIO at SCU. They've had a "taste" of wireless access in SCU's law school and library, and in

parts of the business school and student center, and they want more.

The university has responded with plans to enable wireless support in every campus building, including residence halls, as it replaces network edge equipment. "Information is the lifeblood of a university. We're trying to create a learning environment that's more effective and more convenient than other institutions," Danielson says.

SCU uses Extreme's Summit 300 switch to support wired and wireless connectivity. Because the same security and management tools are used for both infrastructures, Danielson doesn't have to increase his staff to support the growing wireless environment.

Through the wired network and wireless locations, students can access everything from a professor's class notes to forms at the registrar's office. SCU also has automated many administrative functions, including online registration and tuition payment using credit cards. This has improved administrative staff productivity and virtually eliminated lines of students registering for classes or paying tuition. Expanding WLANs to more campus buildings will give students and professors greater flexibility in accessing such resources.

Hot spots everywhere

At Berkeley, WLAN access quickly went from a convenience to a necessity for the EECS school's 1,400 users, many of whom have disconnected from the wired network and use the WLAN exclusively for access to university and EECS resources and applications. For example, students can use the WLAN to download a professor's notes during a lecture.

EECS experienced growing pains with its initial WLAN system and switched to Airespace's wireless product set for its management capabilities, says Fred Archibald, network manager for EECS. Currently EECS' two buildings are equipped with WLANs, along with a lab in a third building. Faculty recently convinced Archibald to install an access point in a nearby café so they could surf the Web, check e-mail and exchange files during off-site meetings.

All three IT managers expect wireless use to increase and to support additional types of devices. SACH's Snyder is evaluating wireless tablet PCs, which doctors could use to review and modify patient records or to write prescriptions. He also is considering offering Internet access to patients and providing a hot spot in the hospital lobby.

No doubt, WLAN switches have made WLAN ubiquity possible. And there's no turning back.

Petrosky is a freelance writer in San Mateo, Calif. She can be reached at mary@mpetrosky.com.



Network mavens Jan Snyder (left) and Irv Hoff at San Antonio Community Hospital are happy with the results from their switched wireless LAN.

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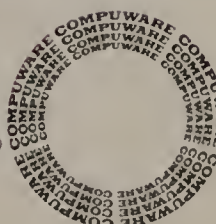
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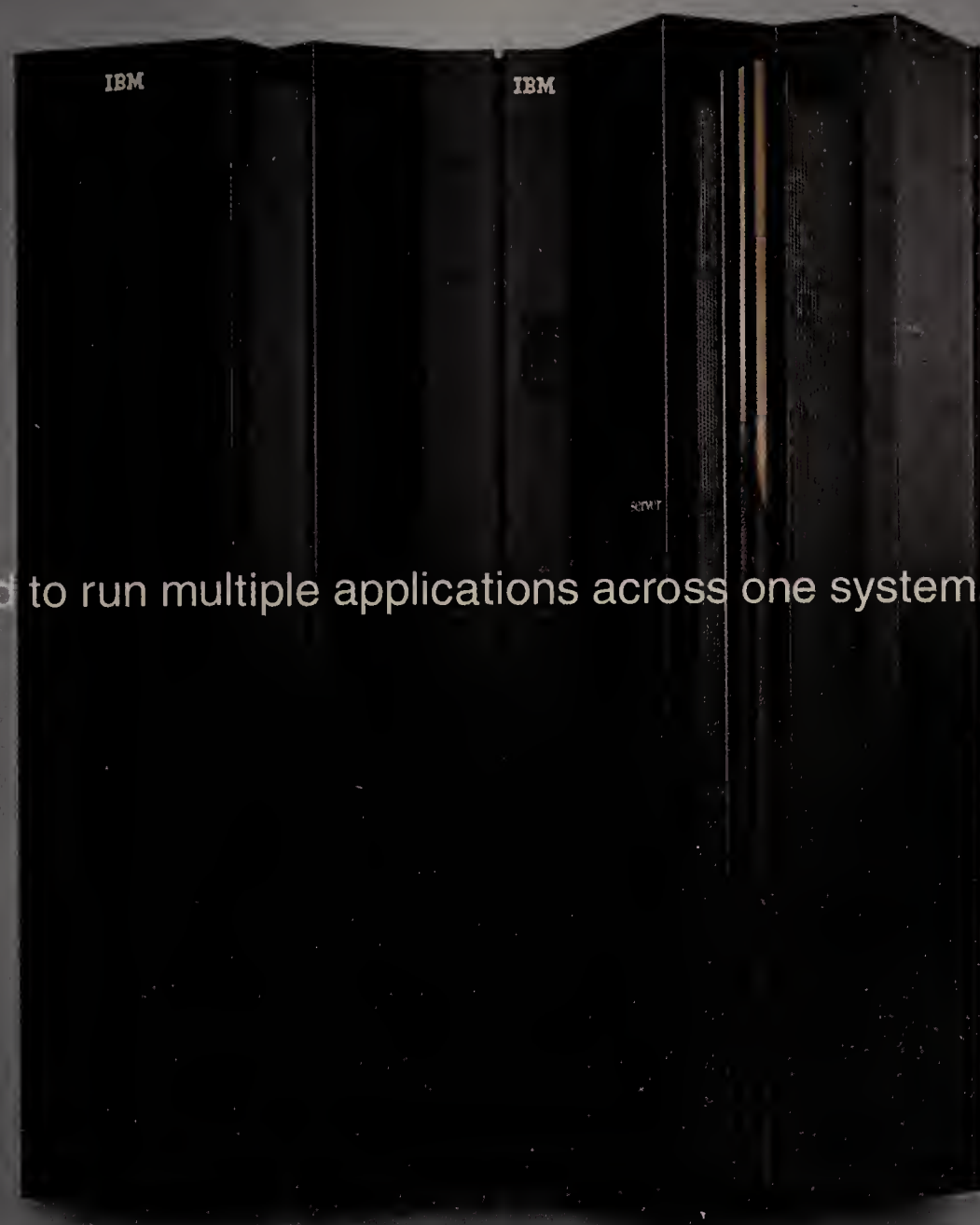




The brain is partitioned in order to handle multiple functions.

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Collaboration

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Soft benefits such as increased flexibility and productivity are great enough to have turned instant messaging and Web conferencing into enterprise must-haves.

BY STEVE ULFELDER

You don't have to sell Sean O'Connor on the benefits of real-time collaboration tools. Although extremely busy as manager of network operations at Worcester Polytechnic Institute, a Massachusetts university with three campuses, this fall he worked from home — because his wife, nine months pregnant, could have required a ride to the hospital at any minute.

No problem. WPI was wrapping up a pilot release of Nortel's Multimedia Communication Server 5100. "I set up my IP phone at home, tunneled in [to the corporate network] through a VPN, established my presence — I brought my office to my house," he says. Sure, O'Connor could have done this five years ago. But he couldn't have held instant-messaging chats with colleagues or shared control of Microsoft Draw and other applications.

Real-time collaboration tools such as IM and Web conferencing are making serious inroads in corporations even though few businesses can point to quantified results. Rather, what's selling them on collaboration tools are "soft" benefits such as the increased flexibility O'Connor experienced and greater productivity.

Analysts say that as real-time technologies mature, metrics will quantify their value. And in any case, it might be too late to turn back. "A lot of managers ask if they should allow instant messaging in their company," says Lou Latham, a Gartner analyst. "I answer, 'You are already — IM has come in under the radar. So we suggest you put it to work.'"

From passive to active use

That statement can just as easily apply to Web

conferencing services. "We were what I'd call passive WebEx users," says Terry Grogan, director of operations and technical services at Lancaster General Hospital in Pennsylvania. That's because software vendor representatives, when called on with support questions, frequently tried to fix problems through WebEx sessions.

This troubled Grogan for two reasons. First, the support reps sometimes made unauthorized changes to user systems, including changes that affected the hospital's back-end databases. More significantly to a healthcare company, Grogan lacked any audit and archiving control over the online conferences. This put Lancaster General at risk of violating the Health Insurance Portability and Accountability Act. WebEx's services offer Secure Sockets Layer (SSL) encryption, but Grogan worried that vendors might not use it by default.

So Grogan implemented Meeting Series, a Web conferencing appliance from Neoteris that stresses security. Meeting Series applies SSL VPN technology to online meetings. Now when vendor support reps propose a Web conference, hospital employees know to launch the session through Meeting Series. "It's basically identical to WebEx, but I can keep an audit trail," she says.

If the hospital was frustrated because it was a "passive" WebEx user, some companies are using that vendor's services very actively and are saving on travel costs as a result.

Professional Service Industries (PSI), a consulting, engineering and testing firm in Orlando, is one such user.

PSI's complex engineering projects and 150 offices in 40 states made assembling employees for training sessions and meetings an expensive, logistical mess, says David Lukasik, chief learning officer at PSI. The company began using WebEx a year ago, and travel costs plummeted, although the company has not yet quantified the savings. "It's easier to be at a computer in your office for an hour, rather than spend a couple of days flying somewhere for a three-quarter-day face-to-face meeting," Lukasik says.

Rules and regs

At Stifel Nicolaus, a St. Louis financial services company, employees have come to rely on IM, says Lee Blackmore, IT director. The firm has about 1,300 employees in 82 branches, and the big revenue-producers — traders and brokers — use IM to communicate with each other, with peers at other companies and often with administrative staff.


As in most businesses, IM use at Stifel Nicolaus had grown willy-nilly, with various offices and departments creating their own "buddy lists" using public IM services. When the compliance department became aware of the heavy IM use, its first instinct was to ban the technology to ensure it would not run afoul of Securities and Exchange Commission rules.

That didn't go over well. "The traders and brokers screamed that they had a phone in each ear already," Blackmore says, "and that [IM was] a tool they couldn't afford to lose."

So IT bought IMlogic's IM Manager, management software that tracks and audits IM activity, regardless of IM service in use. Blackmore says it took nine months to sell the compliance department on IM Manager but the pain was worthwhile because traders and brokers cannot do their jobs these days without IM.

IT managers say that they expect users to devise even more ways to use the tools as they grow more familiar with them. For example, PSI's Lukasik says he can see the company changing the way it approaches business development and marketing by extending WebEx use to clients. And WPI's O'Connor says online collaboration has the potential to revolutionize the effectiveness of distance learning.

Ulfelder is a freelance writer in Southborough, Mass. He can be reached at sulfelder@charter.net.



Terry Grogan, director of operations and technical services at Lancaster General Hospital, uses a specialty collaboration tool to ensure Web conferences meet HIPAA audit and archival rules.



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The power of

Business-process automation software helps organizations work more efficiently, often saving users big money along the way.

BY DENISE DUBIE

When Toronto came under the threat of the severe acute respiratory syndrome virus last spring, Joanne Pearson had to shut down operations at the West Park Healthcare Assessment Centre offices for six weeks. Yet she and her IT staff couldn't stop processing medical insurance referrals and claims.

"We picked up and operated out of a hotel. We were able to quite easily adapt to this emergency situation," says Pearson, general manager at the Assessment Centre. She credits business-process management software — Ultimus BPM Suite from Ultimus — as the source of her staff's flexibility, mobility and efficiency. "We put our critical processes into the software, and because the system is Web-based, we were able to keep working when other people had to close their doors," she says.

The Assessment Centre began using Ultimus BPM Suite in the fall of 2002. This software is typical of BPM products in that it tracks the claims through pre-defined approvals and reminds staff members which person has ownership of specific stages to complete tasks. It also alerts them of potential bottlenecks. Whether from pure-play vendors such as Fuego, Intalio, Metastorm, Pegasystems, SeeBeyond Technology, Ultimus and Vitria; from application integration vendors such as BEA Systems, Tibco and webMethods; or from big software houses such as IBM, BPM products include customizable templates. With these templates, users can input multiple stages of a process and define who to alert about delays — business unit, IT staff or partner, for example — via e-mail, page or phone call.

"These tools let users capture information on how processes are really running," says Sharyn Leaver, a senior analyst at Forrester Research. "If you build a process in BPM software, you can more easily identify bottlenecks and streamline steps."

The BPM software let Pearson automate 35 processes and cut referral and claim turnaround time from 11 days to three. Without BPM software, a claim could land in a stack of papers and wait to get moved to the next stage (another person's desk), all while phones constantly ring as managers, customers and business partners call to check on a claim's status. The improved efficiencies represent about \$75,000 per year to her organization, plus another \$150,000 annually on staff she otherwise would have had to hire.

Others look to the software to help them

document complex processes, eliminate paper trails and deliver more-targeted services to business partners and customers. Such is the case at Safelite Glass, an auto glass services company in Columbus, Ohio.

Dan Vaught, Safelite's manager of enterprise architecture and integration, says using IBM's WebSphere Business Integration Server gives him a detailed look at how things work and lets him better design services targeted for specific end users. Safelite uses the IBM software to integrate disparate ERP applications that contain pertinent auto and insurance data from product suppliers and service providers.

Safelite employees use the data from multiple locations, integrated automatically by the IBM software, to better schedule customers for service. Vaught says Safelite representatives can find the most convenient time and location to service customers based on the availability of a specific part and the service capacity of the agents in their area. The software helps accelerate order processing and

ensure that customers get what they need the first time they call.

"Being able to identify individual pieces of work and personalize processes to a company's needs helps us deliver better services," Vaught says. "We used to measure [services and customer satisfaction] in aggregate, but being able to break out pieces helps us customize services."

Still others find that BPM software lets them show their work to management.

For Gary Lech, CIO of the city of Walnut Creek, Calif., BPM software gives him visibility into 50 city projects, which consists of more than 500 tasks, and lets him measure his team's performance against the local government's expectations. Authorized city officials even can view progress reports and understand the status of ongoing projects, he says. The visibility into IT projects helps Lech prove his staff remains within budget and on track, but if projects get off track, BPM makes it easy to assign responsibility to the appropriate party.

Lech uses Metastorm's e-Work BPM software to document and then automate processes. The BPM software integrates with the city's GroupWise and Crystal reporting systems to enable the proper notification procedures and to generate progress reports, he says.

"The council members and the citizens want to know where their taxpayer dollars are going," Lech says, "so we can't allow these projects to run amok." ■

Joanne Pearson,
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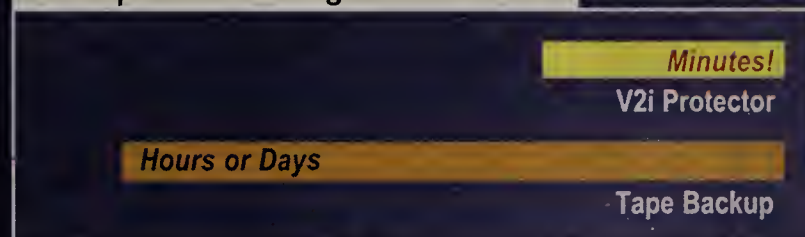
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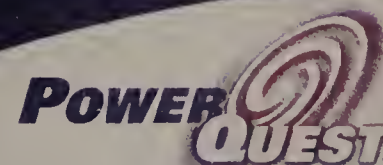


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• **Russ Cooper:** Windows' big bug watcher. **Page 46.**

• **Nora Denzel:** HP's adaptive evangelist. **Page 48.**

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Powerful influences
Four influential women in the network industry share stories about the people who inspired them. **Page 55.**

2003 CEO Powerometer:
Our annual reader survey reveals a decline in vendor power — with one exception. **Page 58.**

The most powerful

BY ANN BEDNARZ AND JULIE BORT

One of the secrets of power is knowing how to live well in the limelight. Like it or not, power obliges a person to be a role model. This twists itself into notoriety for some and celebrity status for others.

As always, our list represents the role models of the network industry across the vendor, user and regulatory communities, as well as among standards setters and big thinkers. But this year, the list is ranked, too.

For the ranking, we looked at numerous criteria, including the person's title and responsibility within the company, the person's visibility (determined by media and speaking appearances in the last year), the ways in which the person functions as a role model for the network industry and a characteristic we call "clout." Clout is how far a person's overall influence reaches, be that throughout a company, a subset of the network community, the industry, the entire business world or even with national governments.

1. John Chambers, president and CEO, Cisco

What more needs to be said about the man who readers have elected as the most powerful vendor CEO in the industry for four years running? (See story, page 58.) With his unfailing business acumen, he remains among the industry's and the business world's most-watched icons.

2. Bill Gates, chairman and chief software architect, Microsoft

Gates delivered his 20th annual Comdex keynote last month, and while the influence of the annual Las Vegas trade show might be waning, Gates' is not. He is arguably the most influential figure in the software industry, at the helm of a \$32 billion company with a \$6.8 billion research and development budget. Sharing his vision

of "seamless computing," Gates proclaimed: "There's more productivity to be gained in the advances that will come in the rest of this decade than the industry has delivered in our entire history up to this date."

3. Sam Palmisano, chairman and CEO, IBM

Palmisano raised industry hopes for economic health when he said IBM would hire about 10,000 new employees next year in areas such as services, middleware, Linux and open-standards-based hardware and software. He made the announcement in mid-October, as IBM reported third-quarter revenue of \$21.5 billion — 9% higher than the \$19.8 billion posted a year earlier. IBM's top dog since March 2002, Palmisano has effectively mobilized IBM's hardware, software and services divisions around a central, common technology vision: e-business on demand.

4. Carly Fiorina, chairman and CEO, HP

Fiorina's reputation as a can-do CEO was hard-won, and it's not one she plans on losing. Fiorina has aptly moved from yesterday's merger to tomorrow's business plan, a power agenda that includes securing the leadership role in building the "new data center." The \$2.5 billion investment in HP's Adaptive Enterprise initiative speaks to how serious she is on that front. And Fiorina might well be as serious about going head to head with Cisco. Some industry watchers read her November resignation from the Cisco board, which she joined in 2001, as a sign of just that.

5. Linda Dillman, CIO, Wal-Mart

Dillman's decisions dictate the technology course not only for this hugely powerful retailer, but also for thousands of suppliers — with ripple effects across the network industry. Take Dillman's June announcement on radio frequency identification (RFID) tags. To a standing-room audience at a retail trade show, Dillman said Wal-Mart would require its top suppliers to implant RFID chips in cases and pallets starting in 2004, with all suppliers required to do so by 2006. Analysts say this move might nearly single-handedly create a \$2 billion RFID market.

6. Ivan Seidenberg, chairman and CEO, Verizon

As leader of the nation's largest regional Bell, Seidenberg solidified his power in November when he officially acquired the chairman title, some eight months earlier than designated in the Bell



Powerful people in networking

Atlantic/GTE merger agreement of 2000. Seidenberg continues to be a headliner on the speaker circuit, never failing to infuse his talks with what has become his trademark message: Government regulation is suppressing innovation, hence recovery, of the telecom sector.

7. Michael Dell, chairman and CEO, Dell

Dell has risen to the top of the network industry, but has clearly yet to hit his peak. His was the fastest-growing power in our annual Powerometer reader survey, and he has become a relied-upon business and technology adviser not only to Washington policy makers, but also to world leaders.

8. John Thompson, chairman and CEO, Symantec

Thompson led Symantec through a whopper of a year, landing it for the second consecutive year on our list of the 10 most powerful companies in networking. No wonder. Thompson orchestrated sterling financials, several big customer wins and the No. 1 market position for a security vendor by revenue. He also completed two all-cash acquisitions, plus other deals. Thompson, who sits on several government advisory committees, also serves on the boards of UPS, NiSource, Seagate and Crystal Decisions. In 2003, he grew higher in business-world fame, starring in countless trade and business-press publications

and as the keynote speaker at Fall Comdex, among other appearances.

9. Joe Tucci, president and CEO, EMC

Tucci this year took EMC on an acquisition spree, topping off 2003 with the mid-December acquisition of virtualization software vendor VMware for \$635 million in cash. This follows the \$1.3 billion deal for back-up and recovery software maker Legato Systems Tucci orchestrated in July, and two acquisitions he oversaw in October — the \$1.7 billion buyout of content management software specialist Documentum, and the purchase of storage resource management vendor Astrum, for an undisclosed amount. These will help Tucci, who advocates what industry watchers have dubbed information life-cycle management (ILM), broaden EMC's technology focus beyond high-end storage platforms. ILM is a strategy to link storage archiving technologies with content creation and data-recovery capabilities.

10. David Dorman, chairman and CEO, AT&T

Dorman remains ever focused on ending AT&T's financial slide, manifest in early December with his surprise replacement of AT&T President Betsy Bernard with old chum and one-time SBC executive William Hannigan. While Bernard had been considered a cost cutter, Hannigan is seen as a

revenue grower. This move topped a year of Dorman's executive juggling, which included naming new heads of sales, network operations and other positions. The 49-year-old Dorman is also a powerful member of the community, holding a board position at an Episcopal high school in Alexandria, Va.

11. Ed Whitacre, chairman and CEO, SBC

As always, Whitacre is shaking up the industry. In July, with great fanfare, he announced a joint marketing deal with satellite TV provider Echostar that makes SBC the first RBOC to tangle with satellite and cable companies over their mainstay, television services. The agreement creates the so-called "quadruple play" bundle, planned for early 2004, in which SBC customers can be billed for multichannel television, local and long-distance voice, wireless, and broadband services by a single provider. He sealed the deal by investing \$500 million in Echostar as part of the arrangement. When he wasn't crafting television deals, he was crisscrossing the country lobbying for an end to regulations that let competitors such as AT&T use his network at cut-rate prices.

12. Steve Ballmer, CEO, Microsoft

Ballmer likes to joke that he can't remember the name of that pesky open source competitor, Linux. But it's really no laughing matter for the CEO of the world's most

The most powerful by category

• **CEO perennials:** Steve Ballmer, Microsoft; John Chambers, Cisco; Michael Dell, Dell; David Dorman, AT&T; Larry Ellison, Oracle; Sam Palmisano, IBM; Ivan Seidenberg, Verizon; Ed Whitacre, SBC.

• **Vendor executives:** Shai Agassi, SAP; Gary Bloom, Veritas Software; Michael Capellas, MCI; Craig Conway, PeopleSoft; Nora Denzel, HP; Tim Donahue, Nextel; Doug Elix, IBM; Carly Fiorina, HP; Bill Gates, Microsoft; Patrick Gelsinger, Intel; Charlie Giancarlo, Cisco; Diane Greene, VMware; Amnon Landan, Mercury Interactive; Darl McBride, SCO Group; Greg Papadopoulos, Sun; Brian Roberts, Comcast; Eric Rudder, Microsoft; George Samenuk, Network Associates; Stratton Scavos, VeriSign; Pradeep Sindhu, Juniper; John Thompson, Symantec; Joseph Tucci, EMC; Peggy Weigle, Sanctum; Irving Wladawsky-Berger, IBM.

• **IT executives:** Mike Bennett, Lawrence Berkeley National Laboratory; Linda Dillman, Wal-Mart; Scott Griffin, Boeing; Rhonda MacLean, Bank of America; Brad Noblet, Dartmouth College; Tony Scott, General Motors.

• **Standards setters:** Dennis Eaton, Wi-Fi Alliance; Hugo Haas, W3C; Henning Schulzrinne, IETF (and Columbia University); Fred Wettling, Network Applications Consortium (and Bechtel).

• **Legislators & regulators:** Kevin Martin, FCC; Michael Oxley (R-Ohio) and Paul Sarbanes (D-Md.).

• **Advocates and industry thinkers:** Nicolas Carr, business writer; Russ Cooper, NTBugtraq (and TruSecure); Scott Hazen Mueller, spam.abuse.net; Bruce Perens, open source activist; Richard Stiennon, Gartner; Harry Weller, New Enterprise Associates.





powerful software company. With anti-trust troubles largely behind him, at least in the U.S., the open source movement is one of Ballmer's next great battlegrounds. Securing Microsoft products is the other.

13. Tony Scott, CTO, General Motors

Scott's role at GM exposes him to myriad technology issues raised in dealing with 340,000 employees, one of the most complex supply chains in the world and a vast distribution network of independent dealers. One topic that consumes much of his attention these days is identity management. Scott represents GM on the management board of the Liberty Alliance Project, and this year Scott started work on the first projects in GM to use Liberty-compliant software, including integrating the identity management software with GM's corporatewide Lightweight Directory Access Protocol directory and employee portal architecture.

14. Doug Elix, senior vice president and group executive, IBM Global Services

From his native Australia to the U.S., Elix has made a mark at IBM and in the network industry at large. He shepherds IBM Global Services' 170,000 professionals in 160 countries as they chalk up one successful enterprise deal after another. IBM Global Services reported annual revenue of \$36 billion in 2002 and already had reached the \$21 billion range in the first half of this year. Elix is known to promote the power of the individual within an organization and for challenging IT executives to embrace open standards so they can make their organizations more powerful.

15. Sen. Paul Sarbanes, (D-Md.) (pictured); and Rep. **Michael Oxley**, (R-Ohio)

This legislative duo is behind the Sarbanes-Oxley Act of 2002, a set of corporate disclosure rules that require publicly traded companies to provide more timely, accurate and detailed financial reports. Conceived in the wake of huge corporate scandals, the bill is designed to reform the accounting industry and restore investor confidence. At the same time, the bill is driving companies to modernize their financial reporting systems and invest in areas such as business process changes, corporate governance and consulting. Compliance is expected to be expensive: Collectively, the Fortune 1000 companies will have spent \$2.5 billion in 2003 on the act's initiatives, according to AMR Research. Sarbanes-Oxley is representative of several other regulatory initiatives compelling companies to spend IT dollars.

16. Rhonda MacLean, senior vice president and director of corporate information security, Bank of America

MacLean is a longtime leader in corporate information security processes. Before joining Bank of

America in 1996, she held down the security fort for 14 years at Boeing. In May 2002, the U.S. Department of the Treasury appointed MacLean as the financial services industry representative for the critical infrastructure protection and homeland security programs. She's a top name elsewhere, leading Bank of America to found a security testing center for its industry and serving on the boards of other security organizations. She also serves in an advisory role to various Washington, D.C., policy makers.

17. Charlie Giancarlo, senior vice president and general manager, switching, voice and storage, Cisco; president, Cisco-Linksys

Giancarlo is among the foragers at Cisco looking for new technology territories to conquer. And with voice and storage under his purview, he's got some of the biggest opportunities ahead of him. Giancarlo also gets to lead the company's charge into the consumer and home office markets as head of the independent Cisco-Linksys division, formed after Cisco acquired Linksys early this year.

18. George Samenuk, chairman and CEO, Network Associates

While Network Associates wavered on the financial tightrope, having to restate earnings in March for the three fiscal years prior to his arrival in 2001, Samenuk finessed some powerful year-end results for the company. He led Network Associates to healthier financials by mid-year and positioned the company well enough by October to acquire three companies. Among those acquisitions was the \$100 million deal for intrusion-prevention vendor IntruVert Networks. Samenuk also serves on the New York Stock Exchange's advisory committee.

19. Fred Wettling, chairman, Network Applications Consortium (NAC); and infrastructure architecture manager, Bechtel

In his capacity at NAC, Wettling leads a formidable group of IT influencers from companies including Boeing, Chevron, Texaco, GlaxoSmithKline and Walt Disney. NAC member companies — which pull in combined revenue of more than \$750 billion — speak with one authoritative voice that can make vendors squirm. (See profile, page 52.)

20. Larry Ellison, chairman and CEO, Oracle

Whatever you might think about Ellison, the man is never dull. His 2003 antics starred the almost-forgotten tactic of the hostile takeover. Although his unsolicited bid for PeopleSoft might not succeed, it has kept Oracle and IT infrastructure in the minds of corporate America and on the front pages of the business press. Through his business chutzpah, Ellison's power remains strong.

21. Craig Conway, president and CEO, PeopleSoft

Conway has had to play at the top of his game this year. The PeopleSoft leader scored an offensive win in June with the acquisition of rival J.D. Edwards, and since then he's managed to keep Oracle, with its hostile \$7.3 billion takeover bid, at bay. His defensive tactics have included crafting a controversial plan that promises refunds of between two and five times the license fees customers pay if PeopleSoft is acquired by a company that disrupts its product plans.

22. Brian Roberts, president and CEO, Comcast

This former member of the U.S. squash team (a silver medal winner at several Maccabiah Games in Israel) now stands on the network industry podium, triumphant in the broadband market. Comcast added 1.7 million customers to its high-speed Internet offerings, finishing its 2003 fiscal year with about 5.3 million subscribers. His success is pushing RBOCs such as SBC to fight back.

23. Eric Rudder, senior vice president of servers and tools, Microsoft

Rudder continues his steady ascent at Microsoft, where today he controls the company's server business and handles its relationship with the developer community — the audience expected to take up Microsoft's .Net religion. The projects Rudder shepherds these days include Microsoft's forthcoming Longhorn client operating system; along with Yukon, the next version of SQL Server; and Whidbey, the next version of Visual Studio.

24. Greg Papadopoulos, CTO, Sun

Orion. Kevlar. Mad Hatter. As fiduciary of Sun's technology development, these are among the projects on Papadopoulos' plate. Orion, detailed early this year, is Sun's code name for its work on simplifying pricing schemes and release cycles. Kevlar is Sun's forthcoming server partitioning software for Solaris machines, and Mad Hatter is its planned Linux-based desktop package. Also on tap is a new generation of UltraSparc blade servers with multicore technology that combines multiple processing units on a single silicon wafer.

25. Scott Griffin, CIO, Boeing (not pictured)

Boeing's history as a user is consistently one of early adopter, teacher, shaper of technologies. Under Griffin's direction, Boeing lately has been all over identity management and collaborative computing. In addition to being a technology visionary, Griffin is popular on the speaker circuit and has an eclectic personal history, including a stint as a firefighter. He's also active in many Seattle-area charities and is an adviser to the University of Washington.



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26. Irving Wladawsky-Berger, general manager, e-business on demand, IBM

When IBM in 2000 put \$1 billion behind its then-fledgling Linux initiative, Wladawsky-Berger led the charge. Now the stakes are even higher: Wladawsky-Berger leads IBM's e-business on-demand initiative, a \$10 billion effort formally launched 14 months ago and aimed at building greater intelligence into IBM's hardware and software resources. The 33-year IBM veteran is responsible for evangelizing technologies such as grid computing and virtualization, and championing the value of businesses that can respond with complete flexibility to changing market conditions.

27. Nora Denzel, senior vice president and general manager, Software Global Business Unit, and senior vice president, Adaptive Enterprise Program, HP

Under Denzel's watch, HP's fiscal 2003 software revenue grew 20% year over year to a new record, with OpenView up 17% and OpenCall up 36%. At the same time, Denzel has grown her software kingdom through acquisitions and has assumed formal responsibility for HP's key Adaptive Enterprise Program. (See profile, page 48.)

28. Nicolas Carr, business writer and consultant

Carr grabbed the industry's attention with his story "IT Doesn't Matter," published in the May edition of the *Harvard Business Review*, arguing that IT's strategic value has diminished as its presence has grown. That story spawned myriad debates and propelled Carr to the A-list speakers' circuit. The tidal wave of publicity the article generated might not be sustainable until his book on the same subject comes out in May, but Carr certainly made his mark in IT this year.

29. Darl McBride, president and CEO, The SCO Group

McBride gets credit for the power play of the year with his legal wrangling over Linux (see "Power plays 2003," page 60). This 42-year-old father of seven children spent the year pursuing his claim that bits of Linux were essentially stolen from SCO, which he has headed for two years. As that battle unfolded, McBride showed just how serious he is, pulling SCO out of the Linux market altogether.

30. Richard Stiennon, vice president of research, Gartner

Stiennon rocked the security world with his June report that said intrusion-detection systems (IDS) were "a market failure." Rare is the analyst that will tell it like it is about an emerging market, one chock-full of potential new analyst-report customers. His stance powerfully influenced IDS makers — forcing them to address their failings now or risk sales. The "IDS is

dead" report, as it is now widely known, was so influential that months after publication, in October, it prompted a roomful of prospective government IDS buyers to invite Stiennon to a face-off with a handful of IDS vendors.

31. Pradeep Sindhu, CTO and founder, Juniper

Sindhu handles technical architecture, design and development at Juniper, which remains a thorn in Cisco's side. He is behind the company's latest initiative, called the Infranet, which is aimed at solving performance and security problems inherent in the Internet. Juniper's Infranet calls for the development of standard network interfaces that will let customers and service providers construct an "infranet" — a public network that combines the ubiquitous connectivity of the Internet with the predictable performance and security of a private network.

32. Kevin Martin, commissioner, FCC

Martin played a pivotal role in the FCC Triennial Review decision, which addressed the topic of whether and to what extent incumbent local exchange carriers need to make elements of their networks available on an unbundled basis to new entrants. His vote helped shoot down a federal rule that would have given competitors less-favorable terms for leasing lines and switching. And, the compromise Martin architected strikes a balance between providing regulatory relief for incumbents' investments in advanced services and ensuring that local competitors will continue to have the access they need to provide services.

33. Patrick Gelsinger, senior vice president and CTO, Intel

Intel's first corporate CTO, Gelsinger coordinates the company's \$4 billion research and development activities, including its Intel Labs and Intel Research efforts. The 24-year Intel veteran also is responsible for aligning the company's initiatives with industry demand — for example, by focusing microprocessor development efforts not only on clock speed but also on qualities such as temperature and power consumption to appeal to mobile device manufacturers — and making sure Intel's growing range of computing, networking and communications products are in sync with one another. So far, Gelsinger's cooperative efforts seem to be paying off: The company recently reported third-quarter revenue of \$7.83 billion, 20% above last year's levels and beating analyst expectations.

34. Stratton Sclavos, chairman and CEO, VeriSign

Sclavos set off a firestorm in September when he launched VeriSign's controversial Site Finder service, which sent Web surfers who entered a nonexistent URL to Site Finder, a page that offered Web links and

paid advertisements. Sclavos' decision drew a downpour of criticism and a couple of lawsuits claiming Site Finder was an abuse of VeriSign's power over the main database of .com and .net domain names. Though heavy persuasion eventually led him to shut down the service, the exercise pointed out how determined Sclavos is to cash in on VeriSign's position of power.

35. Bruce Perens, open source activist

Lots of folks these days have become SCO bashers, since that company shunned the open source community with its attempted legal coup over Linux. But Perens stands above as a highly visible open source activist, a founder of several Linux organizations and a treatise writer on open source and on the waywardness of SCO's claims. Perens even gave up copyrights on a book series he edited on Linux technologies as did the publisher, Prentiss Hall.

36. Gary Bloom, chairman, president and CEO, Veritas Software

Bloom has led Veritas through its transformation from storage back-up and recovery specialist to overall systems management provider. Two recent acquisitions — Jareva Technologies for \$62 million and Precise Software Solutions for \$609 million — added server provisioning and application performance management capabilities, respectively, to the Veritas portfolio. Bloom is leading Veritas to the utility computing arena, where he'll face the big thinkers at IBM and HP also looking to manage storage and software resources automatically and across heterogeneous platforms.

37. Shai Agassi, executive board member, SAP

Agassi is SAP's wunderkind, leading the business applications maker on a quest to become an infrastructure platform provider. His vehicle is NetWeaver, application server and integration middleware upon which all SAP applications eventually will run. (See profile, page 42.)

38. Tim Donahue, president and CEO, Nextel

What immense satisfaction this former AT&T Wireless executive must feel watching all other national wireless carriers chase after Nextel in pursuit of competitive walkie-talkie cell phone service. Nextel has had a 12-year lock on push-to-talk cell phone service, a copycat version of which Verizon finally was able to launch in August. Meanwhile, AT&T is only now working on a competing version. Still, Donahue keeps working hard to stay ahead of the competition, promising satellite-based, global "direct-connect" capabilities, for example. His efforts get a river of ink in the business press, as do

See 50 Most, page 38



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50 Most

continued from page 35

the record subscriber increases that Nextel reports quarterly.

39. Michael Capellas, chairman and CEO, MCI

Capellas earns kudos for shepherding MCI out of its bankruptcy, and now is working frantically to rebuild customer and industry trust. He's recruited new board members with impeccable reputations, including a former U.S. attorney general, a former top member of the Department of Justice and a former head of the Financial Accounting Standards Board. Plus, he's named respected ethics expert Nancy Higgins as chief ethics officer. This avid rock-and-roll lover is ready to make music at MCI.

40. Mike Bennett, senior network engineer, Lawrence Berkeley National Laboratory, U.S. Department of Energy

Vendors listen to Bennett, who often is among the earliest of early adopters in his efforts to keep the high-powered LAN of research facility Lawrence Berkeley National Laboratory up to snuff. One of his latest interests is 10G Ethernet, including how to use the technology over copper to link switches and routers in the lab's data centers. He's keeping tabs on IEEE standards work to create a copper version of the 10G Ethernet 802.3ae standard.

41. Amnon Landan, president and CEO, Mercury Interactive

Mercury's revenue is up 36% annually since 1997, the year Landan became CEO. With \$355 million in the bag for the first nine months of 2003, the company is on track to break the \$500 million revenue mark. Fueling growth is Landan's strategy to broaden the company's core software testing and tuning product line, expand its products to manage applications, and better compete with management stalwarts BMC Software, Computer Associates, HP and IBM. So far, Mercury's business momentum is strong: Last month, the company topped Goldman Sach's list of software companies that are gaining share of users' IT spending dollars.

42. Peggy Weigle, CEO, Sanctum

In a world where the Internet has become critical business tool No. 1, Web application security is at the top of everyone's minds. Weigle, in her first CEO post, has created a top contender in the young-but-blossoming Web application firewall market. (See "Powerful influences," page 55.) Weigle

showed her power when assembling an advisory board to guide the company in product development, signing on numerous well-known industry figures. A renaissance-type of technologist, she holds a bachelor's degree in philosophy (cum laude) from the University of Massachusetts.

43. Russ Cooper, founder and moderator of NTBugtraq mailing list; surgeon general at TruSecure

Cooper has earned widespread respect for keeping politics out of the vulnerabilities update business. (See profile, page 46.)

44. Brad Noblet, director of computing technical services, Dartmouth College

As a network executive at a college, Noblet has to contend with students' changing computing preferences. Increasingly, that means wireless. About 90% of Dartmouth's freshmen arrived on campus this year with wireless-enabled laptops. This puts Noblet among the trailblazers rolling out large-scale wireless LANs — and dealing with the security, management, coverage and scalability issues that go along with a campus WLAN. Noblet also is responsible for Dartmouth's data, telephone and cable TV networks, central machine room operations and software development.

45. Dennis Eaton, chairman, Wi-Fi Alliance Board

As chairman of the Wi-Fi Alliance, Eaton shares his longtime passion for wireless technology to make sure enterprise users can get secure, interoperable products. (See profile, page 50.)

46. Diane Greene, president and CEO, VMware

EMC's mid-December acquisition of VMware stands as testament to the vendor's lead position in making server virtualization software. Greene, VMware's founding chief, will continue guiding the company's efforts when it becomes an EMC software subsidiary in the first-quarter 2004. VMware counts 5,000 corporate customers worldwide — 80% of the Fortune 100. No newbie, Greene has been in the tech industry for 20 years, learning the ropes at Silicon Graphics, Tandem and Sybase, and serving as CEO of a company she co-founded — streaming software maker Vxtreme (purchased by Microsoft in 1997).

47. Hugo Haas, Web services activity lead, World Wide Web Consortium (W3C)

Standards progress is a key factor in corporate adoption of Web services technology, and Haas is committed to the cause. As the leader of the W3C's Web services activity area, he oversees four working groups: the Web services architecture working group, which is responsible for identifying requisite

Web services technologies and explaining how they fit together; XML protocol working group, which is developing an XML-based messaging framework; Web services description working group, which is designing a language for describing interfaces to Web services; and Web services choreography working group, which is designing a language to compose and describe the relationships between Web services.

48. Henning Schulzrinne, associate professor, Columbia University

If the network industry were a building, Schulzrinne would be considered one of its master masons. Through years of leadership roles at the IEEE and, more recently, the Internet Engineering Task Force, Schulzrinne has crafted or influenced many protocols. He is lately known for his work on Session Initiation Protocol, such as examining the interworking of SIP and H.323. Schulzrinne has an incredibly long list of achievements to his name: awards, patents, fellowships and technical committee chair roles. He has published countless papers covering dozens of protocols and technologies, and currently shares his wisdom with computer science and electrical engineering students at Columbia University.

49. Scott Hazen Mueller, chairman of the Coalition Against Unsolicited Commercial Email (CAUCE) and operator of spam.abuse.net

By day, Mueller is a senior systems administrator for California State University. By night, as CAUCE chair, he is one of the superheroes of the anti-spam movement. CAUCE, which claims 30,000 members, lobbies Congress (and state congresses) on behalf of the folks on the receiving end of spam. It does so via analysis and position papers on pending legislation, letters to elected officials, coordination with other anti-spam groups and, at times, asked-for advice — such as participation in the Federal Trade Commission's three-day anti-spam workshop held in April.

50. Harry Weller, partner, New Enterprise Associates

An up-and-comer at the network industry's most powerful venture capitalist firm, Weller landed a seat on the board of telecom industry shaker Vonage. This when NEA orchestrated a \$35 million investment, including \$12 million in NEA funds, in the voice-over-IP carrier. Weller also sits on the board of SourceFire, a security monitoring software start-up. This is Weller's second stint as a venture capital partner. In his prior gig at FBR Technology Venture Partners, he took part in funding other enterprise technologies, from handheld software to WebMethods, which went on to become a model for Internet boom IPOs. ■



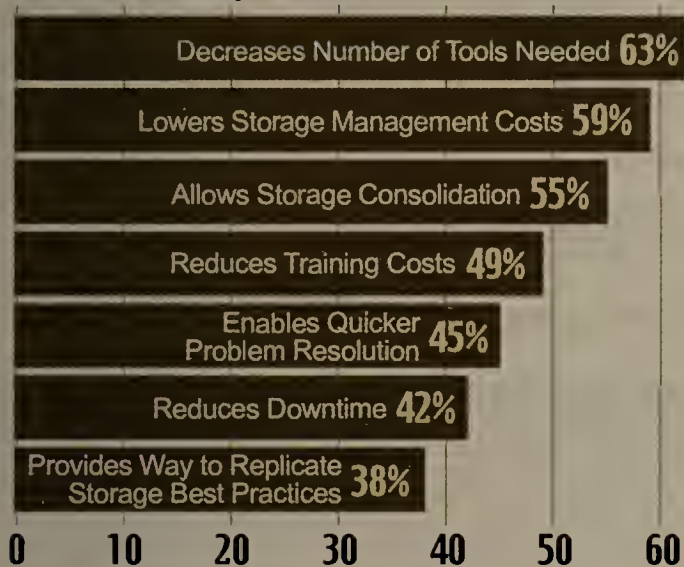
A Sound Storage Investment

Yankee Group report finds users of VERITAS storage management software realize 3-year ROI of at least 200%.

As storage-related expenses chew up ever-larger amounts of IT budgets, IT executives looking for ways to contain storage costs are increasingly turning to a heterogeneous management approach to help them rein in costs while improving performance.

Key Heterogeneous Storage Management Benefits

Percent of Respondents



SOURCE: THE YANKEE GROUP, 2003 SURVEY OF 289 STORAGE DECISION-MAKERS

VERITAS delivers ROI

Customer	3-year ROI	Payback period
Government agency	204%	15 months
Service provider	201%	11 months
Financial services company	205%*	13 months*

* Projected

SOURCE: THE YANKEE GROUP

That is but one of the key findings of a recent study by The Yankee Group on storage management return on investment. The Yankee Group, a research firm based in Boston, surveyed 289 IT executives at Global 2000 firms for the study, and also homed in on three users of VERITAS Software storage management tools to determine total cost of ownership and ROI figures for their VERITAS deployments.

The results present a rather dramatic case for the benefits of a heterogeneous storage management approach: A government agency saw an ROI of 204 percent, a service provider realized an ROI of 201 percent and a financial services company expects a return of 205 percent over three years from their respective VERITAS storage management software deployments. The three companies saw a payback period of 15 months or less, according to a detailed financial analysis Yankee Group conducted for each of the three customers.

"All three sites also experienced a marked decrease in the labor costs associated with managing their storage operations, reducing the time necessary to handle routine storage management tasks and vastly improving their ability to manage complex storage environments," according to the study, written by Yankee Group senior analyst Jamie Gruener and sponsored by VERITAS.

Storage budgets make up 10 percent to 20 percent of overall IT infrastructure budgets, prompting more companies to establish separate storage groups within their IT organizations, the study says. Some 48 percent of the companies Yankee Group surveyed have separate storage groups. With that kind of increased emphasis on storage comes more scrutiny of storage costs and interest in measuring the value of storage investments.

Increasingly, enterprises are finding that the ability to manage a multi-vendor storage environment from a common platform brings numerous benefits, including improving productivity for IT administrators. The strategy also reduces vendor lock-in, enabling customers to select management software independently of their hardware platform, and to select the hardware that best fits each specific backup requirement. Additionally, the strategy reduces downtime, cuts deployment time and streamlines management processes, the report found.

"The bottom line: it's easier and more cost-effective when one can manage storage in a heterogeneous manner," the report states, noting the strategy is employed by more than 50 percent of enterprises today. "Pursuing heterogeneous storage management is a strategic imperative this year and beyond."

Both the larger, 289-user survey and the in-depth

interviews with the three VERITAS customers showed a core requirement in the storage management buying decision is improving administrator productivity. "Whether it is storage provisioning, managing storage capacity and the storage network, or attending to backups, storage decision-makers describe how adopting new storage management tools has reduced mundane/routine tasks for administrators significantly," the report says.

Yankee Group's analysis of the three VERITAS customers, who provided detailed financial information on the condition that they not be named, illustrates the savings to be had.

The government agency customer operates a main data center with storage growth rates of 100 percent per year. It has 52 UNIX servers running a mix of IBM AIX and Sun Solaris. Using VERITAS NetBackup to back up the servers, and VERITAS Foundation Suite for volume management, the agency estimates it reduced time spent on storage management tasks by 25 percent. Additionally, NetBackup enabled the agency to use a tiered backup configuration and consolidate storage to four tape libraries, eliminating the need for an estimated 11 tape libraries, the report says.

VERITAS' service provider customer, which offers application hosting services for enterprises, had even more stringent storage requirements. The company operates two data centers with a mix of 900 Windows, Linux and UNIX servers with 63TB of direct-attached storage and five SANS with 75 TB of capacity. Using a combination of VERITAS Cluster Server, VERITAS Database Edition and NetBackup, the company was able to increase uptime to 99.999 percent — the "five nines" level that telephony companies strive to meet. Its 11-month payback period was the shortest of the three customers Yankee Group interviewed.

The third case study focused on a financial services company with a highly transactional environment that includes 20 Sun Solaris servers, a SAN supporting about 10 TB of data and a mix of Hewlett-Packard, EMC and Hitachi Data Systems storage systems. Using the VERITAS Foundation Suite, VERITAS SANPoint Control and VERITAS SANPoint Foundation Suite HA, for failover, the company increased its capacity utilization from 25 percent to 85 percent. It also increased administrator productivity by about 50 percent, the report says.

In its conclusion, the Yankee Group report says customers looking at storage management solutions should consider a number of issues, including the ability to demonstrate productivity improvements as well as a heterogeneous and centralized approach.

"As the results of this ROI case study indicate, VERITAS software can provide significant financial benefits to customers deploying storage management software," the report says. "At the highest level, VERITAS has demonstrated it can save customers significant costs associated with hardware purchase avoidance, reduced labor costs due to higher productivity, as well as reduced downtime costs."

Download the full report

The Yankee Group report, "**Storage Management Return on Investment from Deploying VERITAS Software**" is available free online. The report contains detailed financial analyses of the three case studies mentioned here, to help you make your own business case for heterogeneous backup software.

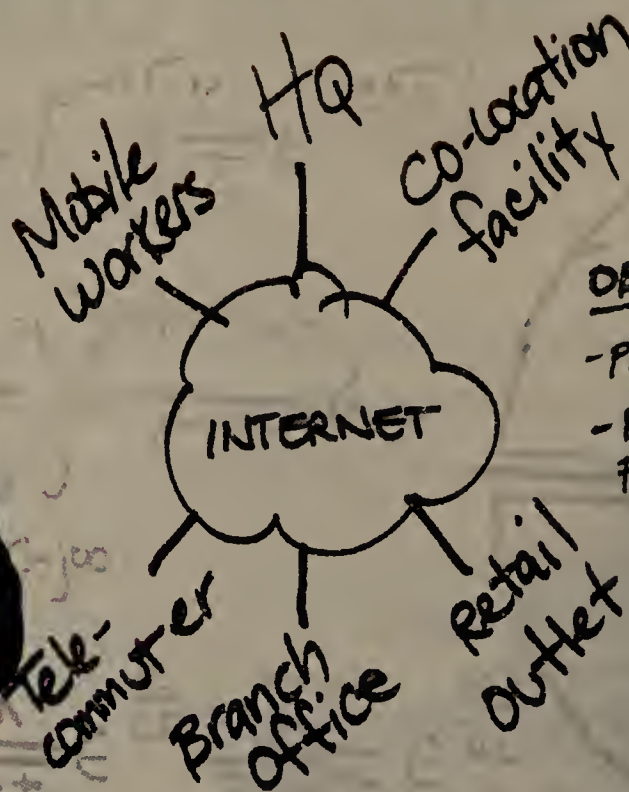
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SONICWALL

SAP's resident entrepreneur

Shai Agassi, executive board member, is leading SAP toward a services-oriented architecture.

BY ANN BEDNARZ

Shai Agassi doesn't remember the purpose of the first software program he coded, but he does remember sprinting to feed the punch card into the mainframe and watch it run. He was 7.

"I wasn't allowed into the punch-card area next to the big mainframe," Agassi says, recalling a computer science program for kids he attended at Israel's Tel Aviv University. "We had to run a mile to submit the program and get the results."

Today, Agassi leads technology development for Germany's SAP, the world's third-largest independent software supplier. At 35, he's the youngest of SAP's seven-member executive board and one of only two non-Germans. His rise has been rapid. Agassi joined SAP in 2001 when SAP paid \$400 million for his corporate portal company, TopTier Software — one of four technology companies Agassi founded in the 1990s after graduating with honors from Technion, the Israel Institute of Technology, with a bachelor's degree in computer science.

Agassi oversees development of SAP's integration and application platform and co-leads the company's applications strategy team. He says he never expected to end up at a company as large as SAP, but he finds it a good fit. "The first year I was at SAP, I fell in love with the company," he says.

Selling infrastructure

Agassi is soft-spoken, but his ideas are grand. Take NetWeaver — Agassi's brainchild. All SAP business software eventually will run on this integration and application server middleware, unveiled in January.

"Agassi deserves most of the credit for having formulated and coalesced SAP's current technology strategy," says Joshua Greenbaum, a principal at Enterprise Applications Consulting.

NetWeaver represents a big shift for SAP; with it, the software company for the first time will be trying to sell

infrastructure along with its core business applications. This bold strategy pits SAP against infrastructure stalwarts. "SAP won't say it, but it clearly is on a war path to compete head to head with IBM, Microsoft and other infrastructure providers of the world," says Eric Austvold, research director at AMR Research.

The move is a defensive one, Greenbaum says. The next generation of applications will be Web services-based, built on an existing infrastructure. The vendor that owns the infrastructure market will define the technology for the applications, he says. "If SAP didn't do this, SAP would become a component provider to someone else's grand vision of a service-oriented architecture," Greenbaum says.

Delivering NetWeaver hasn't been easy, Agassi says. "I sort of have two sharp sticks in my back. I have the largest enterprise applications developer in the world pushing me to build the best platform for their needs, the SAP applications group," he says. "At the same time I've got 20,000 customers that are pushing me to give them a broad, horizontal, open standard-based platform to support their needs in general, not just for SAP applications. Aligning these two vectors into one platform — that's the biggest challenge that one could have."

Family affair

During his pre-SAP entrepreneurial days, Agassi worked with his father, Reuven Agassi. The two co-founded a couple of companies, and today they both work at SAP, along with Agassi's brother.

Agassi still enjoys programming. "Looking at the world from customers' eyes and then trying to understand where complexity is and then designing it out — that's sort of been the goal of my programming," he says. "Engineers love to engineer complexity. Engineering simplicity is a lot harder."

An ideal day for Agassi would be divided between software development and customer interaction. "When I spend four hours doing a design review with the engineers, and we can find ways to address issues that I've advocated from the meeting with customers and figure out a new way of doing things, that's the best day. I go home with a smile," Agassi says.

Success is not without compromise, however. Agassi says he spends less time with his wife and two sons than he would like. "That's the biggest penalty I get for what I do."

But the task at hand is too important for him to ignore. "NetWeaver is bigger than Windows 95 in the scope and size of what we're building," he says. "How many opportunities in life do you have to put out a system like that?" ■

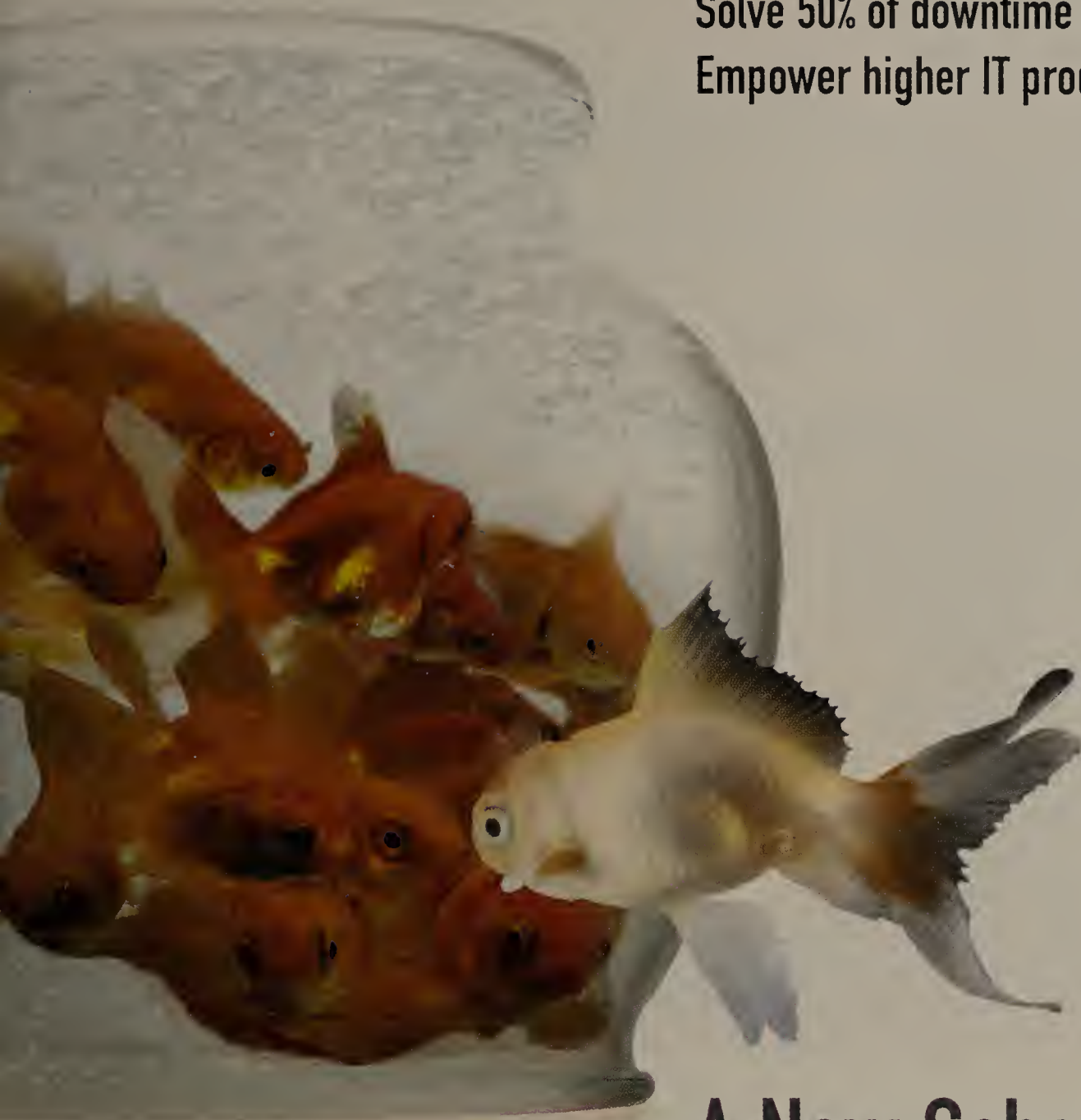
STATS

Qualifications: A serial entrepreneur and programming whiz, Agassi launched a portal company in 1992.

Career goal: Piloting SAP's NetWeaver transition.

Previous employment: Founded corporate portal software maker TopTier; small business software maker TopTier; Manage, software integration company; TopTier; and multimillion-dollar production company TopTier Media.

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How Santa Clara University Webified PeopleSoft 8 and Won

PHOTOGRAPH BY ALAN BLAUSTEIN

CIO Ron Danielson's Triple Play of Bandwidth Savings, Increased Server Capacity and Extended Life Cycle.

THE IDEA was to provide more widespread access to business-critical enterprise applications without increasing the administrative burden on the IT department. Before that goal would be realized, however, Santa Clara University (SCU) got a lesson in what can go wrong with Web-based applications and, more importantly, how to remedy the problems.

In July of 2002, SCU made the move to PeopleSoft 8, the Web-enabled version of the popular application suite. The school uses PeopleSoft to support human resources, financial and student administration applications, including admissions, financial aid and course registration programs, says Ron Danielson, chief information officer for SCU, an 8,000-student university in Santa Clara, Calif.

"As much as we possibly can, it's our intention to push access to administrative information out to students, faculty and staff," Danielson says. With the previous version of PeopleSoft, that was a challenge because it required client software on each user's desktop. "With the Web front end, anybody with a browser can come in and get access."

Access they did, so much so that the university's application servers were overloaded and performance was much slower than with the previous version. "We were one of the first half-dozen

universities in the country to upgrade to PeopleSoft's new Web-based product, and we thought we'd spec'd out our network and equipment adequately to meet our performance needs," he says. "But we weren't even close."

SCU'S REDLINE BENEFITS AT A GLANCE:

- **Bandwidth reduction:** E|X 3250 reduces bandwidth requirements by up to 10M bit/sec, saving SCU at least \$48,000 per year.
- **Increases server capacity:** Offloads connection management, I/O and SSL processing, essentially cutting server loads in half.
- **Reduces number of network components:** Reduces the amount of data traffic, enabling network components such as firewalls to handle more load.

IN SEARCH OF A FIX

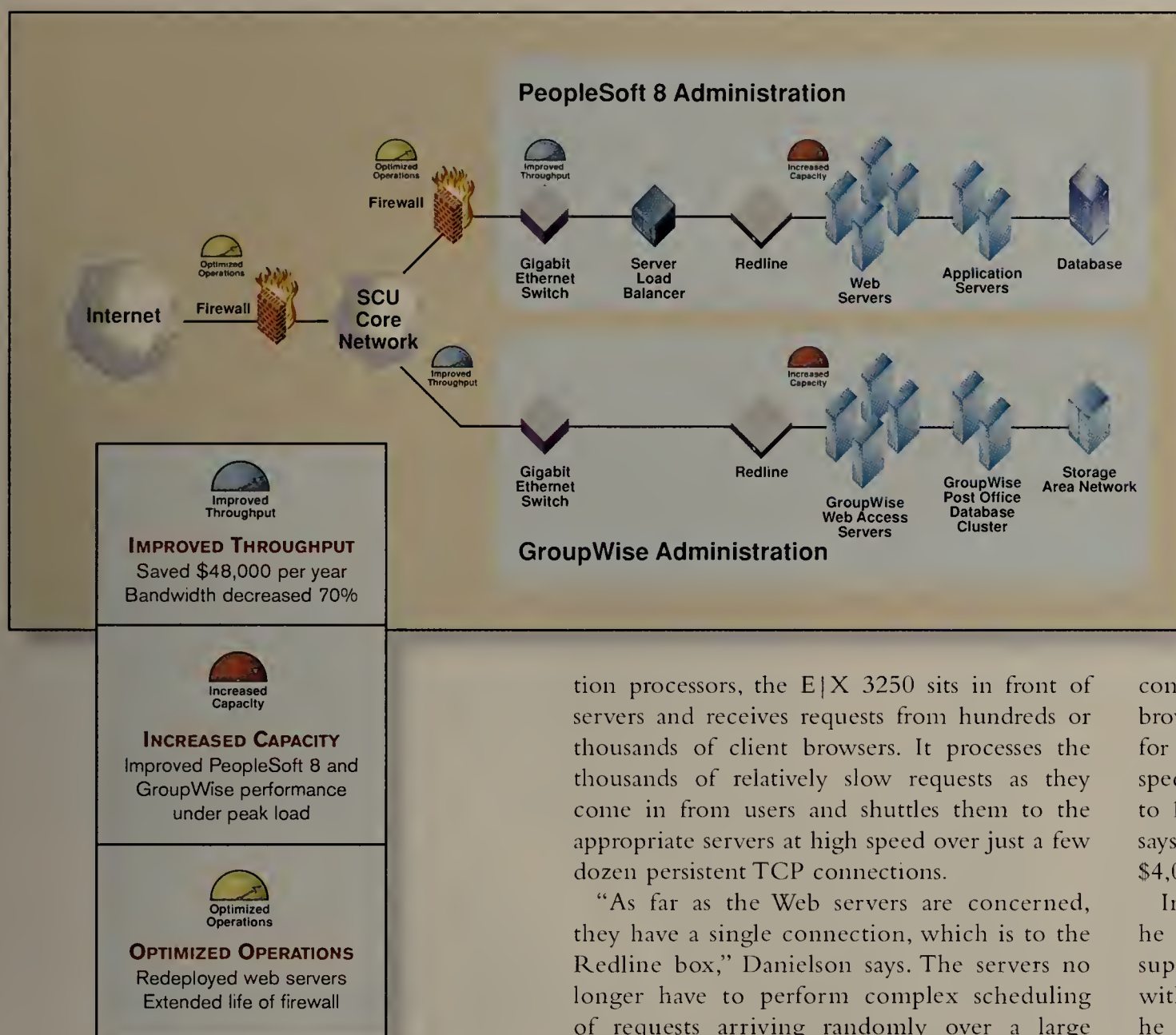
Initially, Danielson and his staff tried throwing more hardware and software at the problem. To an initial configuration of one Web server and one application server, they added three more Web servers and one new application server. They also brought in performance management and software tuning tools, and changed some PeopleSoft parameters related to processing input from users.

"This brought performance to an 'acceptable' level," Danielson says. "But now we had six servers instead of two, and we were still spending a lot more time on the problem than we would have liked."

In the fall of 2002, the university learned about Redline Networks of Campbell, Calif. Redline makes a family of appliances designed to improve Web-based application performance by offloading from the server I/O processing and connection management chores, while compressing content to conserve bandwidth. The appliances also handle Secure Sockets Layer (SSL) processing, thus serving to improve security.

LESS BANDWIDTH, MORE PERFORMANCE

In November, SCU installed one of Redline's E|X 3250 appliances and saw an immediate,



dramatic improvement. Bandwidth usage associated with the PeopleSoft applications plummeted by 70%, thanks to the compression features inherent in the E|X 3250. At the same time, because the E|X 3250 handled connection management chores and I/O processing, server capacity effectively doubled.

The magnitude of server capacity and performance improvements hit home when one of the university's servers went down for more than a week. "We didn't even notice a change in performance," Danielson says. "That tells us how much headroom the Redline box has given us with our PeopleSoft applications."

Like the rest of Redline's enterprise applica-

tion processors, the E|X 3250 sits in front of servers and receives requests from hundreds or thousands of client browsers. It processes the thousands of relatively slow requests as they come in from users and shuttles them to the appropriate servers at high speed over just a few dozen persistent TCP connections.

"As far as the Web servers are concerned, they have a single connection, which is to the Redline box," Danielson says. The servers no longer have to perform complex scheduling of requests arriving randomly over a large number of connections. Instead, they service each response as it arrives and send information back to the enterprise application processor, which delivers pages to the client browser at whatever speed the browser can efficiently handle.

The E|X 3250 worked so well for SCU's PeopleSoft implementation that the university soon installed an additional unit to improve the performance of Novell GroupWise servers that provide Web-based e-mail access. Here the E|X 3250 sits in front of four servers, performing load balancing, connection management and compression. For its GroupWise application, the university also takes advantage of the E|X 3250's SSL offload capability, which obviates the need for the servers to maintain large amounts of user

data, including client certificate information. It also ensures that end users have no direct access to the application servers and the often-sensitive information they contain.

Results from the GroupWise implementation have been similar to those for PeopleSoft: bandwidth consumption on the university's WAN links has been cut in half and response time has improved.

SAVINGS, SAVINGS, SAVINGS

The bottom line, Danielson says, is that the Redline appliances enable SCU to realize savings in three areas: bandwidth reduction, increased server capacity and extended life cycle of other network components.

Bandwidth savings come from the compression features of the appliance, which are browser-aware to adaptively compress content for each requesting user and never require specialized client software. The features save 6M to 10M bit/sec of bandwidth, which Danielson says would cost the university an additional \$4,000 to \$5,000 per month.

In terms of server capacity, Danielson figures he could remove two of the four servers supporting his PeopleSoft implementation without suffering a performance hit, although he has opted to leave the installation as-is to allow for anticipated growth in the number of applications and users. Similarly, on the e-mail side, "We probably won't have to grow that server farm dramatically to handle additional load," he says.

Just as the Redline appliances enable him to get more life out of his servers, they do the same for network components such as firewalls. "With the Redline box reducing bandwidth usage, there's less for the firewalls to examine," so a single firewall can effectively handle more load.

In coming months, SCU will be adding to its Redline implementation another server group that supports university financial applications.

To sum up, Danielson says, "This box delivers on all its claims."

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Windows' big bug watcher

Russ Cooper, moderator of the much-followed NTBugtraq mailing list, has earned widespread respect for his unbiased disclosures.

N BY ELLEN MESSMER

NTBugtraq, the Internet equivalent of a watering hole, is a forum for swapping information on suspected bugs in Microsoft products or getting an early warning about computer worms. Now entering its sixth year, NTBugtraq has become *the* mailing list for IT managers and vendors who need to read the latest dispatches from the Microsoft security war front.

"It's very much considered the No. 1 channel for contributing and looking for new updates and information on vulnerabilities," says Firas Raouf, COO at eEye Digital Security, a maker of scanning products.

If NTBugtraq seems free of the kind of wild-eyed ranting that might afflict any public list about Microsoft, it's because NTBugtraq's founder and moderator, Russ Cooper, is picky about what gets posted on it.

"It has to pass the sniff test," notes Cooper, a Lindsay, Ontario, resident who lives in a countryside house that — in addition to his family, four dogs and a cat — holds a dozen PCs and servers loaded with Microsoft software and testing tools. A 100-mile T-1 line connects Cooper's wilderness outpost to the ISP UUNET in Toronto. The pulsing heart of NTBugtraq is a Chicago-based list-mail server — donated by software vendor L-Soft — that handles mail distribution for about 31,000 NTBugtraq subscribers.

About three-quarters of the messages Cooper gets don't get posted because they fail to "stay on track and to the point," he says. But he does answer a lot of this mail on his own. "If someone says, 'I just discovered a new vulnerability,' well, I'll try to test it first. If the claim looks reasonable, I'll accept it at face value," he adds.

Disclosing Microsoft software vulnerabilities is "a touchy subject," Raouf points out. "Russ is doing a tremendous job in maintaining a level of neutrality."

Cooper's enduring reputation for fairhandedness is all the more remarkable considering risk management vendor TruSecure has

owned NTBugtraq since buying the list from him three years ago, for an undisclosed sum. Cooper is now officially TruSecure's "surgeon general" — a title he picked himself, recalling a news story published four years ago that said his work at NTBugtraq made him seem like the "surgeon general of the Internet."

Cooper says in the ideal scenario no one would release newfound information about software flaws — because virus writers and attackers routinely exploit them — until Microsoft has a patch ready to correct them. Over the years, that conviction has led him to play the broker between security researchers and Microsoft. While Cooper spices the list with his own advice (sometimes chiding Microsoft in the process), he says the real

power of NTBugtraq lies with experts such as Jeremy Allison, Juan Carlos Cuatango, David LeBlanc, David Litchfield and Eric Schultze, who have posted their security research on it over the years.

Microsoft was reluctant to talk about NTBugtraq and its keeper, but the software giant obliquely saluted both by saying: "Active and responsible members of the security community" can raise awareness and "often conduct valuable security research that helps customers stay ahead of contemporary threats."

A self-taught man

Cooper is largely self-taught in Microsoft computing and security. In the early 1980s, he took up programming and selling PCs. A job offer took him from Canada to Africa, where he did programming work in Liberia and Ghana for five years. "I got the idea for NTBugtraq while in Liberia, where it was difficult to communicate," Cooper says. "I began using bulletin boards — which are now superseded by newsgroups and chat — to share information with technical people."

Cooper returned to Toronto in 1991, and did stints at Tandem Computers and MCI, where he worked as a consultant for Vint Cerf, senior vice president for technology strategy. In 1997, he launched NTBugtraq, promising "no spam" and "no flame wars, even those I might have started."

For more than five years, Cooper has stuck to this mission and, it seems, is also sticking to the somewhat outdated, "NT" name. Still, Windows bug watchers flock to the mailing list regardless of its name. ■

JOHN HRYNIUK



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HP's adaptive evangelist

Nora Denzel, head of HP's Adaptive Enterprise and Software Group, oversees a \$2.5 billion enterprise software strategy.

BY DENISE DUBIE

Ask enterprise IT managers about HP software and the conversation could begin and end with OpenView, HP's network management platform. Nora Denzel plans to change that.

In October, the 41-year-old executive became responsible for HP's \$2.5 billion Adaptive Enterprise strategy, which promises to deliver intelligent hardware, smart software and services that will dynamically allocate data center resources on demand. In her quest to make HP's software the management platform of choice for utility computing, Denzel faces competition from IBM, Microsoft and Sun — and HP's own reputation.

"Denzel has to overcome the perception of HP as a hardware vendor that treats software as an afterthought," says Rich Ptak, partner with Ptak, Noel & Associates.

Denzel says IT managers worldwide recognize HP software brands, but multiple acquisitions in the past few years (including the merger with Compaq) prove that HP is opting to buy technology rather than build it.

"Adaptive Enterprise is a new foray for HP. We want to help our customers through the next decade understand how they can use their technology to better serve the needs of their business," she says. While OpenView is a popular product, HP isn't the go-to vendor for multiple software needs. Denzel says with HP's new product strategy, she aims to change that perception.

By no means is software new for HP. The OpenView portfolio is among its major offerings, and includes network, server, service-level and application management software. The company also sells other management products in the form of OpenCall, ProLiant Essentials (from the Compaq merger), and now, under Denzel's domain, the Utility Data Center suite. Of course, HP sells

myriad other software products such as development tools, messaging platforms, operating systems, security products and the like. All told, it brings in about \$1 billion in revenue from its software offerings.

Yet industry watchers say Denzel will face an uphill battle getting a slow-moving vendor to quickly deliver new Adaptive Enterprise products that are based on its technology acquisitions. She'll have an especially steep road trying to bring in the kind of money that HP's server and other hardware offerings generate, some say.

The challenge excites Denzel.

"Being a person that gets bored easily, I think software is the way to go," she says. Today, software is maturing from handling

hardware quirks to understanding complicated business processes. In essence, "it's fundamentally changing the way things work," she says.

An early passion

Denzel's passion for all things computer-related began on a farm in upstate New York as one of six children. Denzel's father, a math and science teacher, nurtured her love of numbers and constant questions about how things work. And her mother, who has a degree in medical technology, instilled a tremendous work ethic.

"I learned you have to make your own way and that nothing is handed to you. To this day, I think with hard work, I can make things happen," Denzel says.

Tinkering with her father's home computer, Denzel picked up software programming. In high school she was shocked, yet excited, when guidance counselors told her she could make a living doing something she loved. She studied computer science mostly because she was "fascinated with the rates at which data can move around," and in 1984, Denzel landed a job as storage software engineer at IBM.

While at IBM, Denzel went to graduate school at night and earned a master's degree in business administration. After moving up the ladder to worldwide director of IBM's multi-million-dollar line of storage software products, she left in 1997 to work at Legato Systems. There, she served as a senior vice president of product operations and watched revenue grow from \$50 million to \$250 million in four years. She joined HP in 2000 as head of network storage and quickly took charge of the entire software group.

Self-described as a tough but fair manager, Denzel now oversees about 3,000 HP employees and reports to HP chief Carly Fiorina. She says her experience at both a huge and a somewhat smaller company helps her prioritize tasks day-to-day at HP. During a

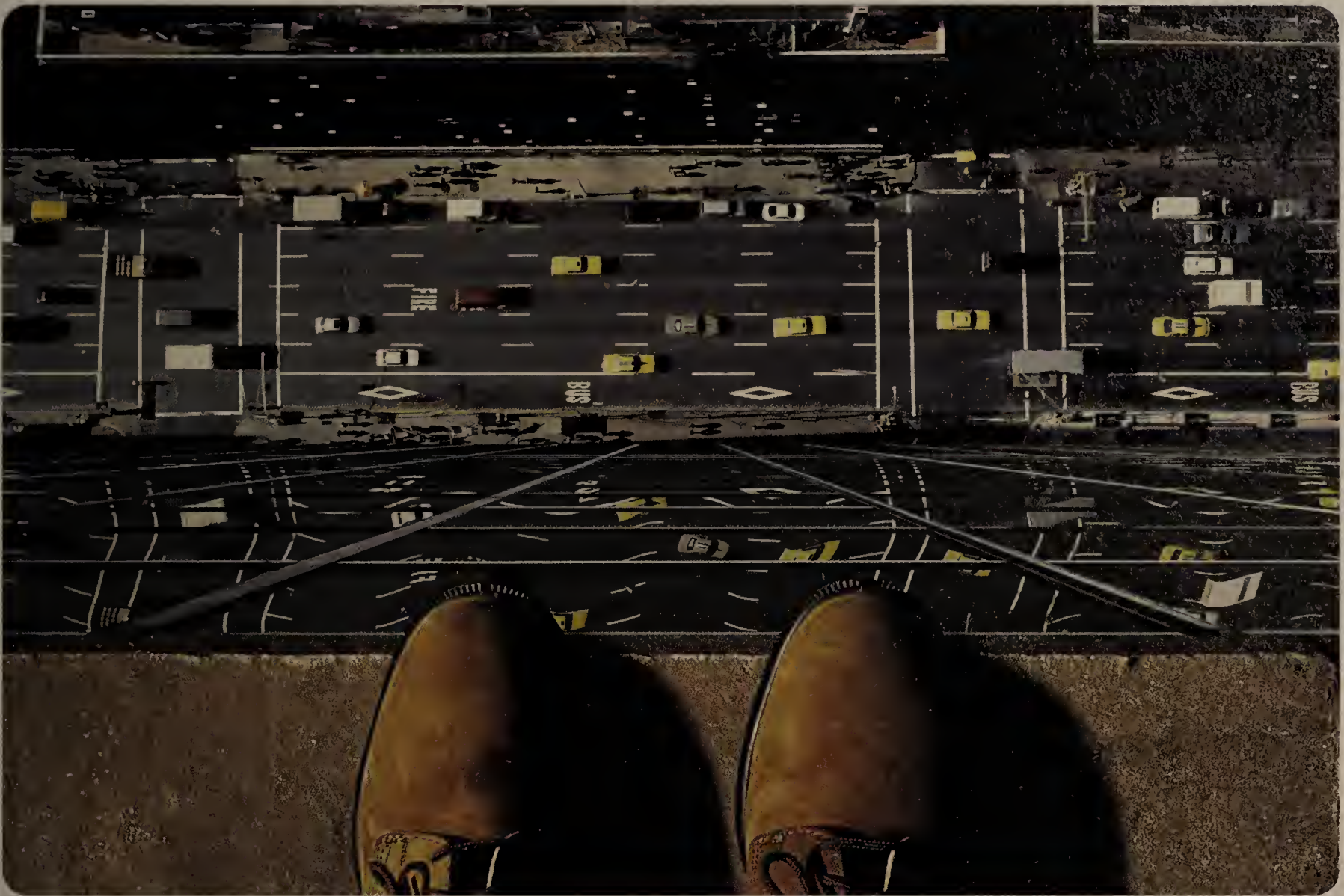
See Denzel, page 54

Qualifications: Bachelor's in computer science from the State University of New York at Plattsburgh; MBA from Santa Clara University.

Career goal: To make good on HP's promises of delivering the uber operating system for intelligent data centers.

Previous employment: Director of product operations at Legato Systems; storage software engineer at IBM.

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Quantum

Wi-Fi's biggest fan

Dennis Eaton, chairman of the Wi-Fi Alliance, has turned his love of wireless into the pursuit of safe, interoperable enterprise gear.

BY JOHN COX

Dennis Eaton, chairman of the Wi-Fi Alliance, once dreamed of being a veterinarian. But his dream withered during a few days of college fieldwork with a vet.

"I decided I needed a nice, clean desk job," says Eaton, who then turned his undergraduate attention to the art of radio frequency engineering. That must be his true calling after all — nearly 18 years later, he's still fiddling around with those radio waves.

After receiving a bachelor's degree in electrical engineering from Michigan State University in 1984, Eaton began working on radio frequency — mostly for classified government projects — at Harris Semiconductor. Most recently, he's worked on 802.11b radio chipsets at fabless semiconductor maker Globespan Virata.

"RF engineering is pretty complex stuff," Eaton says. "The tools today let you get in the ballpark [of solving a problem]. But beyond that, it's a lot of intuition and experience."

That blend of science and art, of technology and intuition, has served this 41-year-old well during his tenure with the Wi-Fi Alliance. The Alliance, founded in 1999, exists to test and certify interoperability of IEEE 802.11-based wireless LAN (WLAN), or Wi-Fi, products. Today it comprises more than 205 member companies.

A hands-on visionary

Eaton's involvement with the Wi-Fi Alliance started in May 2000 when he helped his boss, Alliance co-founder Jim Zyren, wade through the slew of Alliance invoices piling up on his desk. Both men at the time worked for Intersil, in the fabless semiconductor maker's group designing 802.11b radio chipsets. (Globespan Virata has since acquired that Intersil unit.) After sorting the invoices, Eaton offered to relieve Zyren of managing the Alliance's Web site, www.wi-fi.org.

When Zyren gave up his Alliance board seat in early 2001, Eaton seemed a logical choice to finish out his term. Eaton became the board's vice chair and technology committee chair in June 2001. Two months later, leading cryptographic experts threw the Wi-Fi

industry into a tizzy when they published a paper detailing the weaknesses in the 802.11 encryption scheme, Wired Equivalent Privacy (WEP). Eaton realized that the Wi-Fi Alliance might be certifying products that corporations would never buy.

"Prior to that, everything was at a theoretical level. That paper brought [the problems] to a practical level. It was pretty scary," he says.

Eaton, who took on the chair position in late 2001, built consensus among fellow board members, other Alliance members and engineers on the IEEE 802.11 committee regarding a technical solution to the security mess. The group would take a subset of the WLAN security changes already being crafted in the IEEE 802.11i Task Group,

and write and distribute software for these changes. This interim fix, dubbed Wi-Fi Protected Access (WPA), could be loaded into new and existing WLAN products, adding features to rotate encryption keys and otherwise beef up WLANs security. A hands-on guy, Eaton "personally evaluated the security schemes in hand [for correcting the WEP weaknesses]," says Amer Hassan, a fellow board member.

Bill Carney, Alliance vice chairman and director of marketing at Texas Instruments, denotes Eaton as an industry visionary. "Dennis knows how to prioritize the issues facing the industry and makes sure the board understands them and addresses them in a timely and thorough manner," he says. "On issues where there are several possibilities, he often comes up with the pro/con for each scenario, which rounds out the board's discussion."

Getting out the word on Wi-Fi

Eaton, who in 1994 received his master's degree in business administration from University of Central Florida, also understands the value of good public relations. He's put enormous effort into "selling" users on WPA and convincing the public that Wi-Fi is safe, Hassan says.

Such effort takes a toll. "It's tough because Wi-Fi is a very dynamic industry and can consume the majority of my 'available bandwidth' at [some] points in time," Eaton says. Fortunately, Globespan Virata grants Eaton the time he needs as Alliance chairman, as Intersil did before it. "They understand that, ultimately, what I contribute to Wi-Fi is good for the industry, and that's important to them," he says.

With his wife of 18 years, and their two children, a girl and a boy, ages 6 and 8, the Eatons could be a poster family for "The Digital Home." Their Melbourne, Fla., house includes a half-dozen computers, a wireless and wired network, wireless Tivo and lots of video games where father and son do battle. When he's not out cycling, he spends his remaining spare time, Eaton jokes, being a "sysadmin." ■

TONY ARRUZA

Qualifications: 18 years in radio frequency engineering, plus an MBA.

Career goal: Stay involved with technology while moving into areas of wider business management responsibility.

Previous employment: WLAN marketing at Intersil; radio frequency engineering at Harris Semiconductor.



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own General Patton

Fred Wettling, a top network executive for Bechtel, has a knack for rallying the troops around his favorite standards cause, the Network Applications Consortium.

F BY JOHN FONTANA

or relaxation, Fred Wettling zigzags his Yamaha sport-touring motorcycle along a serpentine stretch of North Carolina Highway 129 known as the Tail of the Dragon.

The 11-mile route, stuffed accordion-like into 318 corners with such names as Hog Pen, Little Whip and Gravity Cavity, is as much a spiritual recharge as it is a metaphor for Wettling's IT career — a journey filled with twists and turns where he's always been at the controls with his hand on the throttle.

As infrastructure architect for San Francisco global engineering and construction firm Bechtel, Wettling dissects the future and extracts the technology that drives the company forward. A self-taught computer fanatic, he also chairs the Network Applications Consortium (NAC), a small group of like-minded network executives from corporate giants such as Bechtel, Boeing, Disney and Nike that promotes integration, interoperability and vendor collaboration.

The NAC politely pins big-boy vendors such as Cisco, IBM and Microsoft up against the schoolyard fence and convinces them to play nice. "The level of trust and the competence we've established in the NAC allows us to exert our influence," says Wettling, who joined the group in 1997 after wandering into a meeting to check out the agenda. "It's something individual members couldn't do on their own."

Midwestern influence

The NAC's gentle-but-determined influence mirrors Wettling's powerbroker style. He gets General-Patton-like results using a warm smile, a firm handshake and a knack for rallying the troops.

The 56-year-old, an amateur ham radio operator and sculptor of bonsai trees, attributes that style to his Midwest upbringing during the 1950s and early 1960s by a father who worked as a human resources manager and a mother who sold real estate and dabbled in amateur theater. "I inherited it from my folks, who were easy to get along with," he says.

Wettling says moves between Iowa, Illinois and Minnesota as a child and four schools between the ninth and 12th grades gave him the skill to thrive on change.

"Part of my approach is to talk to people about what is important to them. It's getting organizations engaged; it's getting people engaged. Part of success is getting people to share in that success," he says, citing the NAC as one example.

He started as an accounting major at the University of Houston in 1967, left in 1969 to work in Gulf Oil's accounting department before returning to night classes at the University of Houston in 1976 and graduating in 1981 with his accounting degree. His only formal computer training was a single Fortran class, with the rest of his knowledge

derived through "a lot of elbow time with experts." In turn, many now turn to him as an IT authority and subject-matter expert.

"It amazes me how much Fred knows about everything out there, every standard, every protocol, every mechanism and what is going on with them," says Mike Beach, a NAC member from Boeing.

Leading by example

Wettling amassed a portion of that knowledge while helping build Bechtel's IS and IT architectures. He started with Bechtel in 1980, tasked with performing the same accounting magic he had finessed for MW Kellogg, another global engineering and construction firm. He lists his work overhauling MW Kellogg's accounting practices and systems among his greatest accomplishments and says his computer fascination took root there.

After joining Bechtel, he helped move the accounting system to the mainframe. Then he successfully completed a six-month mission impossible to create the company's first accounting system for the IBM microcomputer — a project he began by teaching a three-hour course on accounting fundamentals to his programmers.

This characterizes Wettling's style, which shuns company politics and hidden agendas to focus on leading by example and education.

"You go in to ask him a question about technology, and before you know it you've had an hour discussion," says Tim Carmichael, a systems engineer in Bechtel's infrastructure engineering group. "He goes to the whiteboard in his office and draws it out for you and shows why it will be important to Bechtel. He gets real excited about technology."

In 1984, Wettling became an IT manager. In that role, he helped upgrade Bechtel's mainframe environment, integrated the mainframe with a network of PCs, and built or maintained data centers and IT infrastructure for offices in Chicago, San Francisco and Oakridge, Tenn. — where he is now based.

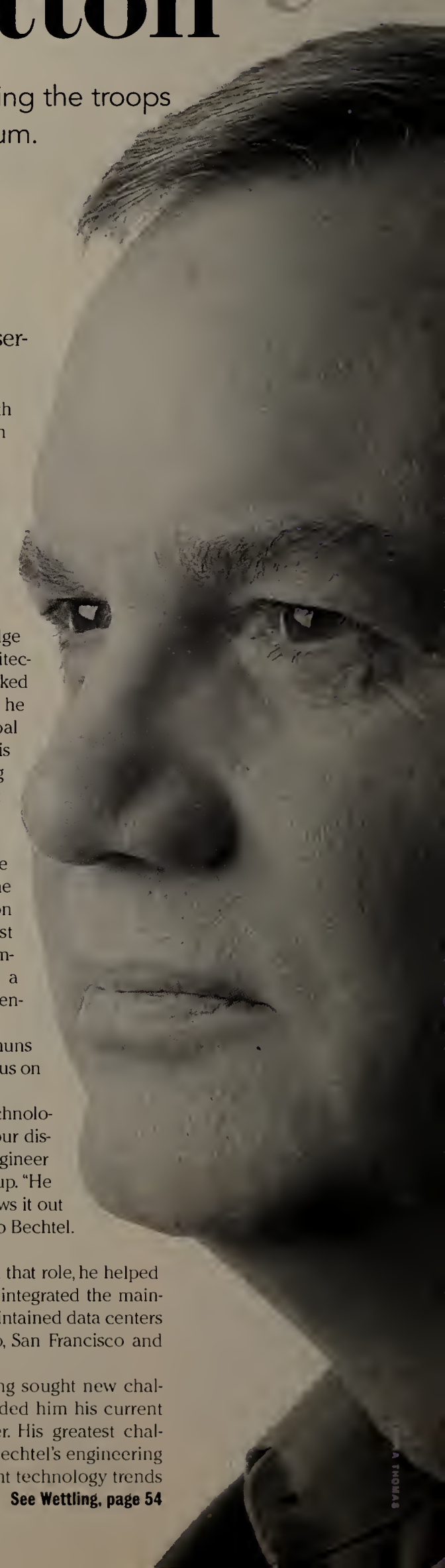
With the completion of each task, Wettling sought new challenges. In 1997, that desire to do more landed him his current job as infrastructure architecture manager. His greatest challenge now, he says, is closely tying IT with Bechtel's engineering and construction work by pursuing the right technology trends

See Wettling, page 54

Qualifications: Accounting degree from the University of Houston, but mostly self-taught on all things IT.

Career goal: Drive standards into as many IT infrastructure products as possible.

Previous employment: Financial systems development at MW Kellogg.



A black and white photograph of a person rappelling down a steep, textured rock face. The person is wearing a light-colored t-shirt, shorts, and a harness, and is holding onto a rope. The background is a clear sky.

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Denzel

continued from page 48

given workday — always long — she attends to tasks such as deciding product direction, seeking out new technology

purchases or working with partners to develop services.

"At IBM, I gained the ability to figure out how to move the ball forward in a very large and complicated system, and at Legato, I learned a lot more about running

a business," Denzel says.

Over the years, Denzel was the only woman at the table in many board meetings, but she never felt any sort of discrimination.

She's found the hardware, storage and

device sectors of the network industry to be driven by men, while more recently for software, the playing field sees more gender diversity. All that aside, her work ethic prevails. "I just work so much that any question of gender dissipates," she says.

The one thing she is still learning on the job at HP is how to keep the customer appetite for new technology whetted.

"The new challenge is to make sure that you're constantly articulating the business benefits of the new technology rather than the technology itself," she says. The economy hit hard times in the past few years, and earning consumer trust and interest represents a new challenge for all vendors, she says. "The way people buy, use and measure their IT resources has dramatically and indefinitely shifted in the industry."

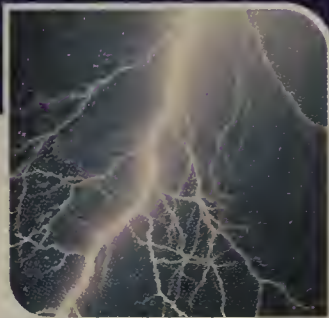
In those rare times when she's not working, Denzel enjoys time with her husband. Favorite activities include scuba diving and hiking around the Northern California mountains.

"I like the idea of being inaccessible under water and hiking where the cell reception isn't so good," Denzel says. ■

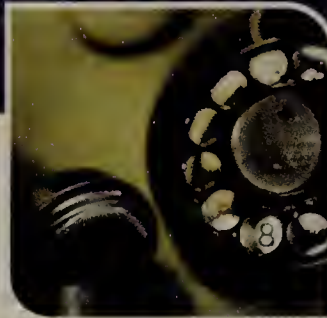
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Wettingling

continued from page 52

and standards.

Standards are Wettling's passion. They are essential ingredients to managing a global IT infrastructure, he says.

He champions the fight on many fronts, including public forums. For example, the NAC has high-profile involvement with Burton Group's annual conference, and he helped pull together the Open Group, the Distributed Management Taskforce and the NAC for delving into issues related to mobility and directories (MAD). The trio calls this attempt to solve identity management issues for mobile devices the MAD Challenge.

Participation in such events help move Wettling toward his goal of increasing the NAC's visibility. "One problem we have is name recognition. We're going to grow our membership beyond 30 companies," he says. But he won't let the group grow too large and risk losing the intimacy that spawns productive discussions.

Then he'll start again to educate and engage.

"I want to become more of an influencer on the outside so that I can benefit Bechtel on the inside for the long term," Wettling says. "Progress is incremental, and I think I am promoting change at the right pace." ■



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influences

Four influential women in the network industry share stories about the people who inspired them.

BY JULIE BORT

Our list of the 50 most powerful people in networking illustrates that the industry is still predominantly male. But women are making powerful strides. How did today's top female executives make their way? We asked four from our 2003 list to tell us who most influenced them in their professional pursuits.

Linda Dillman

CIO, Wal-Mart Stores

Wal-Mart is an undeniable IT powerhouse. Dillman, CIO since August 2002, replaced Kevin Turner, who was promoted to CEO of the Sam's Club division.

Who most influenced you?

The person who influenced me most in my career is Kevin Turner.

He always had a strong belief in me, even when I doubted myself. He taught me to never settle for less than the best from myself and those around me. He taught me that doing so was the right thing for me and my associates — it allows people to grow beyond their own expectations. He taught me the value of relationships. He taught me to never compromise my values.

Nora Denzel

Senior vice president and general manager, HP Software Global Business Unit; SVP Adaptive Enterprise

In October, Denzel transitioned from head of network storage to the leader of HP's \$2.5 billion Adaptive Enterprise strategy for utility computing. (See profile, page 48.)

Who most influenced you?

My mother. We had a large family — six children — and she worked full-time. She had little, if any, outside help. She was incredibly smart; she had a degree in medical technology. Also growing up, I clearly admired Ada Lovelace and Grace Hopper. These were women that way before technology became popular (or even women working became popular) were in computer science. So reading about some of their struggles and what they went through was inspirational.

What I learned from my mother was perseverance, the ability to prioritize and focus on what's important. I learned from her that you have to make your way and that nothing is handed to you. She instilled in me the work ethic I have today.

Grace Hopper coined the term "bug" or "computer bug," because there was an actual moth in the big IBM vacuum computer. She was a very



CAREY SOOKOCHEFF/sgoodson.com

well-respected, early computer scientist. [Ada Lovelace, an unusual 19th century historical figure, was a mathematician who assisted in the creation of the first computer programming language.] Those are stories that you read when you're young that give you confidence that you too could achieve great things in the technology industry.

I have been blessed to work with incredibly smart people — there isn't really one that sticks out. There are just so many that you learn from, that you are lucky to be able to sit at the table communicating with them and understanding their different viewpoints.

Peggy Weigle

CEO, Sanctum

In 2002, IDC called out Sanctum as the de facto leader in the nascent security field of Web application firewalls. Heading Sanctum, Weigle represents an endangered breed: the powerful start-up CEO.

Who most influenced you?

There have been several key people in my career, but two stand out: Matt Mandalinci and

John Dillon.

Matt Mandalinci was the vice president of sales at Pilot Executive Software. He gave me my first outside sales job. I'd built the telemarketing team at Pilot, but he believed I had the drive to do outside sales. The board vetoed the idea the first time, but after I'd run the Boston Marathon, Matt went back to them, and they agreed I had tenacity, so they gave me a shot. Matt was a great coach and believed 100% in me. I worked my tail off to make sure I delivered for him, becoming head of Eastern region sales.

[Sanctum Chairman] John Dillon, now CEO of Navis, has been a key mentor who believed in my abilities. I ran Arbor Software's Eastern region under John for years, after which he promoted me to run North American sales as he moved up the ladder to CEO. John gave me several opportunities to grow and coached me as I stretched into new roles. Arbor was a

great ride where I learned how to build a large, successful sales organization. Later in my career, John encouraged me to reach for the brass ring by introducing me to Sanctum.

Diane Greene

CEO, VMware

In December, EMC acquired VMware for \$635 million, cash. Greene, a serial start-up leader, will stay on to lead EMC's newest addition.

Who most influenced you?

Alice Harper and Franco Putzolu.

Alice was my seventh and eighth grade band and orchestra leader. Under her [direction], our public school band won the No. 1 title for the state every year. She was clear, set very high standards and was always surprisingly fun.

Franco Putzolu was the chief software architect at Tandem Computers who I had the opportunity to work closely with for about four years. He had similar qualities: clear, high standards, surprisingly fun. In addition, his approach to problems always seemed to yield the simplest and most effective solution. ■

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On shaky ground

2003 CEO POWEROMETER

Our annual reader survey reveals a decline in vendor CEO power — with one man the exception.

BY JULIE BORT

While Cisco CEO John Chambers kept his hold on the No. 1 spot in this year's annual Powerometer survey (his since 2000), the real power story is Dell's Michael Dell. He stands out as the only CEO who maintained his year-over-year Power Rating, while climbing the ranks.

Dell leapfrogged IBM CEO Sam Palmisano to grab the No. 4 rank, up from No. 6 in 2002. Dell always runs a tight ship, and network executives have faith that the man will continue to succeed.

But other bright spots were rare, although eight CEOs (40%) did climb in rank, determined by slotting the Power Ratings from high to low. (For details on how we conducted the Powerometer survey, see "How we did it," page 12.) Six (30%) declined in rank, while three (15%) held steady. Three had no comparative 2002 results,

having taken over as CEO this year.

HP CEO Carly Fiorina and Nortel CEO Frank Dunn join Dell as the biggest climbers, each moving up two spots. After finessing the Compaq acquisition, Fiorina consolidated her might when former Compaq CEO Michael Capellas left his position as president of the merged company to take on MCI's leadership.

In 2001, as leader of Compaq, Capellas ranked No. 17, with a Power Rating of 55.2. This year, as MCI CEO, he landed at No. 20, his Power Rating at 36.

IBM's Palmisano is an odd power duck. He fell in

rank and received a lower Power Rating despite keeping financials strong and development efforts focused at the No. 1 Network World 200 company (see www.nwfusion.com, DocFinder: 9035). Respondents nicked him almost two full Power Rating points — placing him at No. 5 compared with No. 4 in 2002. His camera-shy stance is keeping him a virtual unknown, even a year after taking over as chairman (and about a year and a half after becoming CEO) of one of the world's most-watched companies.

Sun CEO Scott McNealy, hardly an unknown, also saw his power dwindle in 2003. This no doubt results from Sun's continued financial doldrums, thanks to rising competition from less-expensive Linux machines, among other threats.

With corporate scandals still fresh in their minds, respondents remain gun shy on CEO power. "Got power?" respondents seemed to ask. "Prove it." ■

2003 POWER RATING

In our annual Powerometer survey, readers get a chance to rate CEO power on a scale of 1 to 100, with 100 being the most powerful. In their minds, the power of all but one CEO has declined this year.

Rank 2003	Rank 2002	CEO	Power Rating 2003	Power Rating 2002	Change	% change
1	1	Cisco's John Chambers	69.7	72.1	-2.4	-3.4%
2	2	Microsoft's Steve Ballmer	68.5	69.4	-0.9	-1.3%
3	3	Intel's Craig Barrett	59.4	63.5	-4.1	-6.4%
4	6	Dell's Michael Dell	58.1	58.1	0	0
5	4	IBM's Sam Palmisano	57.9	59.8	-1.9	-3.1%
6	7	Oracle's Larry Ellison	53.5	57.7	-4.2	-7.3%
7	9	HP's Carly Fiorina	52.6	53.5	-0.9	-1.6%
8	N/A*	AT&T's David Dorman	50.2	N/A	N/A	N/A
9	5	Sun's Scott McNealy	49.0	58.4	-9.4	-16.1%
10	11	Verizon's Ivan Seidenberg	47.0	50.0	-3.0	-6.0%
11	13	Nortel's Frank Dunn	46.8	49.7	-2.9	-5.8%
12	10	3Com's Bruce Claflin	44.7	50.7	-6.0	-11.9%
13	12	EMC's Joe Tucci	43.9	49.7	-5.8	-11.6%
14	15	SBC's Ed Whitacre	43.3	46.5	-3.2	-6.9%
15	N/A**	Sprint's Gary Forsee	42.2	N/A	N/A	N/A
16	14	CA's Sanjay Kumar	42.2	48.0	-5.8	-12.1%
17	18	BellSouth's Duane Ackerman	41.7	44.4	-2.7	-6.0%
18	19	Qwest's Richard Notebaert	37.4	39.2	-1.8	-4.6%
19	17	Novell's Jack Messman	37.4	44.9	-7.5	-16.7%
20	N/A***	MCI's Michael Capellas	36.0	N/A	N/A	N/A

N/A = new to list this year; was not CEO of the company when last year's survey was taken.

* C. Michael Armstrong ranked No. 8 in 2002 *** John Sidgmore ranked No. 20 in 2002

** Bill Esrey ranked No. 16 in 2002

Power Ratings, rounded to the nearest tenth, were rounded to the nearest hundredth to break ties. Forsee's rating: 42.23; Kumar's, 42.18; Notebaert's, 37.39; and Messman's 37.37.

POWER WINNERS

Several CEOs climbed the ranks, but Dell CEO Michael Dell did so while maintaining his Power Rating from 2002.

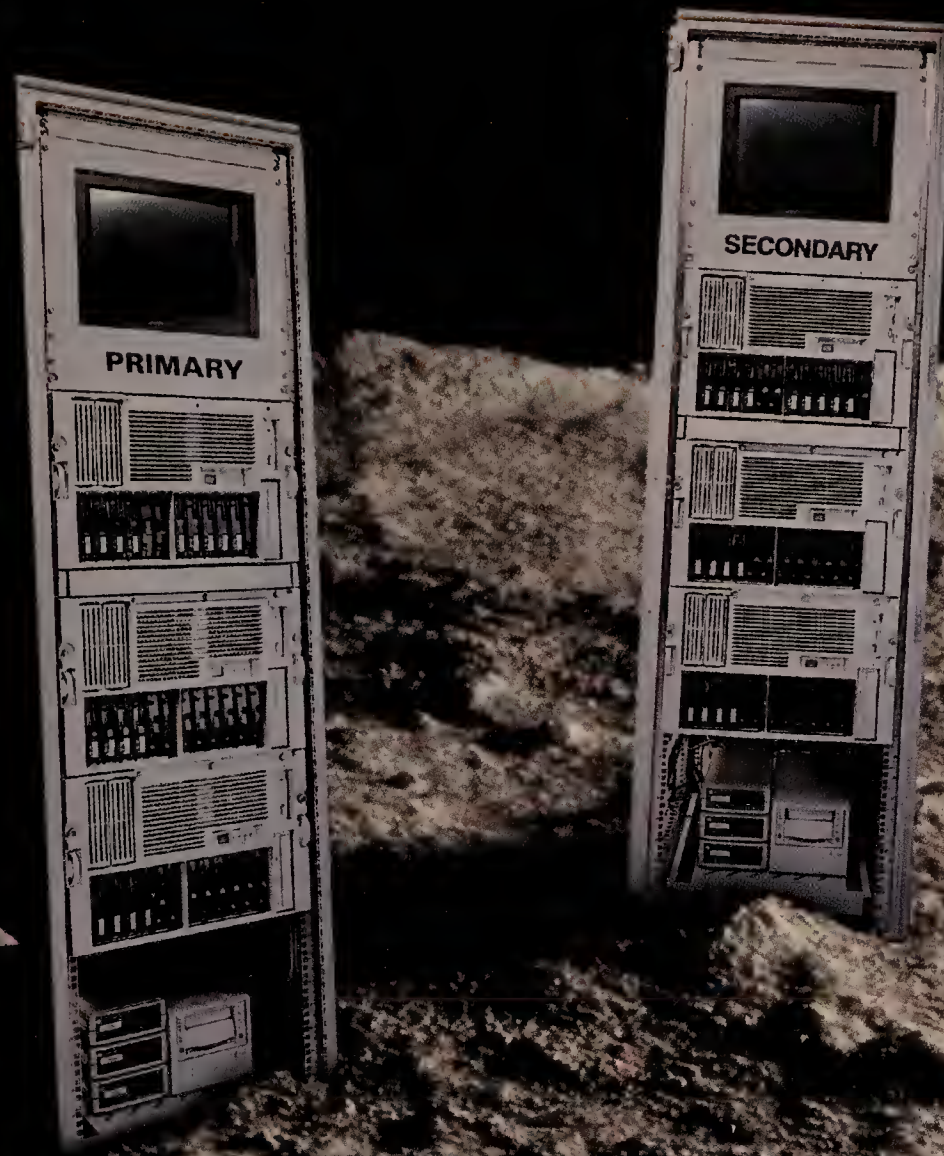
Rank 2003	Rank 2002	CEO	Rank increase over 2002
4	6	Dell's Michael Dell	2
7	9	HP's Carly Fiorina	2
11	13	Nortel's Frank Dunn	2
6	7	Oracle's Larry Ellison	1
10	11	Verizon's Ivan Seidenberg	1
14	15	SBC's Ed Whitacre	1

POWER LOSERS

All CEOs (save Dell's Michael Dell) experienced a decline in their Power Ratings, yet these six also lost rank.

Rank 2003	Rank 2002	CEO	Change in 2003 Power Rating	Rank decrease over 2002
19	17	Novell's Jack Messman	-16.7%	2
9	5	Sun's Scott McNealy	-16.1%	4
16	14	CA's Sanjay Kumar	-12.1%	2
12	10	3Com's Bruce Claflin	-11.9%	2
13	12	EMC's Joe Tucci	-11.6%	1
5	4	IBM's Sam Palmisano	-3.1%	1

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Power plays

POWER STRUGGLES

Our look at major power struggles and contentious issues shaping the network world.

Power plays 2003

Get the blow by blow in three major power struggles, plus other hot moves of the year. See story at right.

IT vs. the mischief makers

As cyberpunks crank up their games, network executives fight back by building security-aware corporate cultures. Page 62

Offshore outsourcing: Business boon or bust?

Proponents defend off-shore outsourcing as a low-cost method to offload some IT-related tasks, but the risks of staff backlash looms large. Page 64

Challenged by compliance

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Butting heads over B2B

EbXML battles Web services over which will become the e-business platform of choice. Page 66

Carriers keep on carping

The FCC's Triennial Review delivers a decisive blow to the beleaguered long-distance carriers, but they're not giving up the

MCI struggles out of bankruptcy



Jan. 14: CEO Michael Capellas outlines 100-day plan.



Feb. 3: Slashes 5,000 jobs as part of a plan to cut \$2.5 billion in costs.

March 14: Writes off \$79.8 billion in goodwill, equipment and other assets.



May 19: Settles fraud charges with the SEC, agreeing to pay a \$500 million civil penalty.

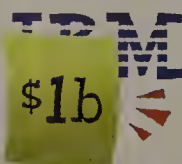
July 1: Sheds fixed wireless service assets in a \$144 million deal with Nextel.



July 8: Cuts revenue projections over the next three years by \$4.2 billion.

The SCO Group takes on the Linux world

Jan. 22: Retains high-voltage attorney David Boies, former anti-trust Microsoft slayer, to look into possible violations of its Unix and Linux intellectual property.



March 7: Files \$1 billion suit against IBM, charging code misappropriation.

May 15: Abandons Linux business and warns commercial Linux users they might be liable for intellectual property violations that, it alleges, exist in the Linux source code.



June 6: Presents documentation it says proves it was granted all rights and copyrights to Unix and UnixWare when it bought those operating systems from Novell in 1995.

June 16: Terminates IBM's right to sell AIX, and amends the original lawsuit by upping damages sought to more than \$3 billion and asking for a permanent injunction to stop IBM from selling AIX Unix. IBM says nothing doing.

IBM, HP, others fight for lead in on-demand computing

March 10: IBM unveils three software modules designed to predict and respond to sudden increases in data center workloads.

March 18: Microsoft announces Dynamic Systems Initiative around self-managing data center software.

April 29: CA airs on-demand computing strategy.

May 5: Veritas Software jumps into server management market.

May 12: EMC and HP ready metered on-demand storage programs.

April 7: BMC Software lays out strategy for integrated service management.

May 1: IBM announces slew of storage and blade-server software.



May 6: HP maps out Adaptive Enterprise strategy.

May 14: IBM grabs Think Dynamics, maker of automated server provisioning software.

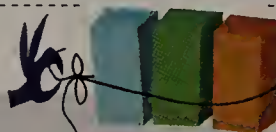
Other industry ups and downs



Jan. 7: Cisco and IBM agree to cross-sell their Fibre Channel SAN products to customers.

Jan. 27: Microsoft's long-awaited CRM software hits the streets. Separately, the company acquires online Web conferencing service provider PlaceWare.

Jan. 23: Cisco sues network equipment maker Huawei Technologies, claiming unlawful copying of its intellectual property.



Feb. 20: FCC issues unbundling rules, yet it does not clearly favor either the RBOCs or CLECs.

Feb. 24: HP enters the IP storage market with an iSCSI storage router.

March 10: The Liberty Alliance Project outlines its federated identity management architecture.

March 20:

- Cisco acquires home networker Linksys for \$500 million in stock, and VoIP software maker SignalWorks, for \$13.5 million in stock.
- 3Com jumps back into the large enterprise LAN core switch market via a reseller arrangement with Huawei. Meanwhile, Cisco presses its case against Huawei, and Huawei countersues.

2003

We plot three major industry struggles, and look at various other power plays.

July 22: Critics blast the reorganization plan during a Senate committee meeting.



Aug. 13: Richard Roscitt joins as president and COO. Most recently, he was CEO of ADC Telecommunications.

July 28: AT&T alleges MCI intentionally rerouted voice calls through Canada to avoid paying access fees. MCI opens an investigation and begins cooperating with federal investigators.

Sept. 2:

- Hit with a civil suit, filed by AT&T, regarding its alleged call-routing scheme.
- Creates new board.

Sept. 9: Reaches a settlement agreement with two principal creditors that had objected to the bankruptcy plan.



Oct. 14: Appoints its first chief ethics officer, Nancy Higgins, longtime corporate ethics executive.



Oct. 31: Judge approves reorganization plan, which will erase about \$24 billion in debt, leaving \$3.5 billion in net debt and \$2.3 billion in cash.

July 21: Registers Unix System V source code with the U.S. Copyright Office and says it will offer Linux users UnixWare licenses as protection against possible future copyright violations.

Aug. 4: Red Hat files a complaint against SCO for creating an "atmosphere of fear" about Linux.



Aug. 7: IBM countersues, saying that SCO is violating the general public license governing Linux use.

Aug. 13: Terminates IBM Sequent license.



Aug. 23-26: Denial-of-service attacks shut down corporate site.

Sept. 8: Readies invoices for corporate users to levy fees for Linux use.

Sept. 9: CEO Darl McBride posts open letter to the open source community asking it to resolve this dispute.



Sept. 10: Linux creator Linus Torvalds says SCO has not shown infringement of its intellectual property.

Sept. 16: Files a motion to dismiss Red Hat's lawsuit as baseless.

Sept. 24: HP offers to indemnify customers that acquired Linux on an HP device by Oct. 1, 2003, against legal action from SCO.

Sept. 26: IBM adds a charge of copyright infringement to its countersuit.

Oct. 17: Receives \$50 million in private funding for use in part to enforce its intellectual property claims; pushes back the date for doubling the price of the intellectual property license for Linux; indefinitely delays plans to invoice Linux users.

Oct. 28: Files papers asserting IBM doesn't have the right to enforce the general public license governing Linux.



June 6: IBM Tivoli unveils self-managing and -healing software for middleware servers and applications.

June 16: HP unveils more than 30 management products under its Adaptive Enterprise strategy.

Aug. 5: HP, IBM and Sun back Tripwire, an effort to develop file signature data standards that could be important to automated computing.

Aug. 20: Oracle adds grid computing capabilities to a new version of its application server software.

Sept. 8: HP acquires Talking Blocks, maker of Web services management software.

Sept. 10: Oracle organizes a consortium to hammer out technology standards for grid computing in commercial environments.

Sept. 22:

- HP names Nora Denzel, head of the business software unit, to lead its Adaptive Enterprise efforts.
- Sun provides outsourcing firm Affiliated Computer Services (ACS) with pay-per-use server storage resources.



Oct. 1: Sun follows ACS deal with a similar arrangement with outsourcing firm SchlumbergerSema.

Oct. 14: Electronic Data Systems and management software maker Opware initiate work on Data Center Markup Language, a standard for describing various data-center components and interoperability.

Oct. 10: IBM teams with Cisco to develop standard ways of providing self-diagnostic and self-healing enterprise IT networks.

Nov. 17: HP announces about 40 Adaptive Enterprise-related products and services.

Dec. 15: EMC buys VMware, leading virtualization software maker, for \$635 million.

April 21: CA forms Open Security Exchange group to establish common specifications for building security information management products.

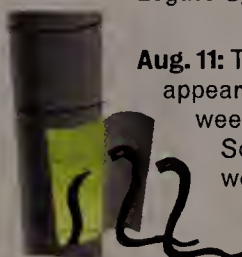
May 21: W3C sets a formal royalty-free policy.



June 2: Cisco shows access point software that will allow centralized management across an enterprise wireless LAN.

June 11: Gartner security analyst Richard Stiennon issues a report saying IDS technology is a failure and will be obsolete by 2005.

July 8: EMC shakes up storage with the \$1.3 billion purchase of Legato Systems.



Aug. 11: The Blaster worm appears, followed one week later by the SoBig.F e-mail worm.

Aug. 21: The FCC releases final Triennial Review order, which removes the requirement that Bells offer discounted rates to competitors on fiber-based broadband lines.

Sept. 15:

- AT&T plots \$3 billion migration to an all-IP core.
- VeriSign ignites industry and user ire when it launches Site Finder redirection service; succumbs to pressure and turns the service off within weeks.

Nov. 10: Microsoft creates \$5 million "bounty" fund for information on the SoBig and Blaster virus writers.

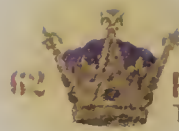


Nov. 13: Cisco and Nortel plan SSL support in their VPN products.



Dec. 2: Betsy Bernard, head of AT&T Business Services group, resigns while AT&T names William Hannigan, most recently CEO of Sabre Holdings and one-time SBC exec, as president.

Dec. 16: President Bush signs CAN-SPAM Act into law.



IT vs. the

As cyberpunks crank up their games, network executives fight back by building security-aware corporate cultures.

BY LINDA LEUNG

The summer of 2003 will go down in the history books as a rough one for network security executives. According to Computer Economics, an IT research and consulting firm, hackers unleashed at least 50 viruses during August alone. These include the Blaster worm, which Symantec estimated infiltrated 330,000 systems within its first four days, and SoBig.F, to which e-mail security tools vendor MessageLabs awarded the dubious honor of being the fastest-spreading virus ever. The company intercepted 12.8 million SoBig.F-laced e-mails for more than 65,000 business customers within 13 days of its release.

Computer Economics estimates that the financial effects of worms and viruses unleashed in August could reach \$2 billion. A toll like that leaves network executives struggling to answer two big questions: Will business always live in fear of virus writers? And what will it take to turn the tide against the bad guys?

Action plan

Security experts say network executives can triumph over the ne'er-do-wells. What's needed, they say, are pervasive security-aware corporate cultures.

To get there, network executives must begin by insisting on CEO leadership. The CEO must decide on the risk level the company is willing to take and instill in the workforce the importance of being security-savvy and of using security technologies to protect against attacks.

In a security culture, regularly changing passwords, not opening suspicious e-mail attachments and other basic precautions are second nature. One way to engender such a culture is to include security compliance in performance reviews, suggests Mike Rasmussen, a security analyst at Forrester Research and vice president of standards and public policy at the Information Systems Security Association (ISSA).

Getting tough on non-compliers is another option. David Cullinane, ISSA president, explains how one company avoided succumbing to this year's MS-S Slammer worm by giving users 48 hours to apply patches and then severing network con-

nections for those who did not comply by the deadline.

For their part, network security professionals must accept the CEO's risk assessment and strive to better understand the

delicate balance of remaining open for business while staying protected, security experts say. "Some security people seem to think that they can issue edicts and that things will happen. But businesses take risks all the time — that's how they make money," says Cullinane, who also is chief information security officer at a Fortune 500 financial services company he declined to name.

Practice what you preach

To be sure, IT departments are not excused from the cultural change necessary to combat all the script kiddies, malicious hackers and serious cybercriminals out there.

Blaming Microsoft for selling software with vulnerabilities is easy, but in-house developers should be building better security into their code. And as Microsoft works

to streamline its much-maligned patch-management architecture, user organizations should standardize on one version of an operating system. "You can't afford to deal with systems that can't be patched because they are too old," Cullinane says.

And user organizations must put in place adequate programs for tracking how a system was built, recording its maintenance and life cycle, and knowing which group is accountable for its security, says Joe Duffy, security practice global leader for PricewaterhouseCooper's Global Risk Management Solutions. "Who has accountability and why? The security guys don't have authority to do anything about how assets are configured and deployed," he says. "The good guys will never get the upper hand if they don't know where their computer assets are."

IT operations and security teams often work against each other to the detriment of overall security, says Jose Granado, a partner in Ernst & Young's Security & Technology Practice. "The IT guys try to get things running and operational, and the security guys are regarded as the ones who say 'no,' so sometimes IT tries to circumvent things."

User organizations must embrace security as an enabler rather than as some bad-tasting medicine, ISSA's Rasmussen says. By managing risk and putting in adequate controls, security could help extend a business. For example, banks enable online transactions by using passwords that should contain a certain number of characters or symbols. Asking for a higher level of authentication, such as password plus token, would turn security into a disabler.

Patience in the playing

Rasmussen says he expects the security playing field to become more balanced over the next five years. "Organizations will pull ahead because of the cultural change, and software vendors will build tighter security," he says.

And nothing is more powerful than a security-savvy workforce, Cullinane adds. "If you have 60,000 employees you will have 60,000 pairs of eyes watching for strange things happening on the network," he says. ■

STRUGGLE SYNOPSIS

The issue: According to the 2003 Computer Security Institute/FBI Computer Crime and Security Survey, 75% of 530 respondents suffered financial losses as a result of computer crimes. Theft of proprietary information and denial-of-service attacks led to the highest losses, at \$70.2 billion and \$65.6 billion, respectively; losses from virus attacks reached \$27.4 billion. The reported number of newly discovered vulnerabilities doubles each year, according to CERT.

Outlook: Good can triumph if user organizations create security-conscious cultures. Companies must decide the level of risk their organizations are willing to take, and IT and security teams must create security frameworks and awareness programs that ensure employees become security-savvy.

Enterprise impact: Employees should consider security measures, such as regularly changing passwords and not opening suspicious e-mail attachments, as a matter of course. Application developers should build security into code, and business managers should present security as a competitive advantage.

ILLUSTRATION BY FELIX HOLZWELL



Special Report

From Network World Fusion

Are you still wired?

Once a luxury, wireless is rapidly becoming a business necessity, an enabler that keeps mobile employees productive and customer-facing employees connected and up to the minute. But, and there is a big BUT, as with any emerging technology there are lessons to learn, technologies to fine tune and advances all the while, meaning we have to relearn the lessons and fine tune the technology before forging full steam ahead.

This SPECIAL REPORT written by Network World editors is a snap shot in time, examining how companies are putting wireless technology to work, the critical developments in wireless security, and the emergence of a whole new class of wireless LAN switch products that promise to redress many of the short comings of first generation wireless LAN solutions. Take advantage of this free offer from Network World Fusion and secure your copy of the SPECIAL REPORT: *Wireless LAN Advances: A Concise Assessment* in PDF format today.

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Offshore outsourcing: Business boon or bust?

Proponents defend offshore outsourcing as a low-cost method to offload some IT-related tasks, but the risk of staff backlash looms large.

BY SUSAN MARKS

A manufacturer needs to upgrade its engineering and design capabilities to remain competitive. The network staff, already bare bones, doesn't have the time to do the upgrade, but IT can't afford to hire full-timers for the job. This is a familiar scenario these days as companies jockey to get ahead in a global economy struggling to recover from the post-bubble slump. One solution that's increasingly gaining converts is offshore outsourcing.

Offshore outsourcing is not only less expensive — as much as 75% less — but also faster and better, some experts say. But, they admit that not everyone is thrilled by the prospect of sending jobs out of the country. "I don't think there is a more divisive and partisan issue in the IT community right now than offshore," says Steve Sanazaro, a Dallas IT leadership partner with Tatum CIO Partners.

The conflict is a throwback to 1970s protests over buying Japanese cars, says Glenn O'Donnell, a program director for Meta Group. "A similar thing is now happening in the white-collar world. ... The economy is forcing dramatic changes within IT that are going to be unpleasant for a lot of people, and one of them is outsourcing," he adds.

Many U.S. workers protest that jobs are going offshore at a time when unemployment is high and IT budgets tight. Another concern is that the savings figures might be inflated. "Many outsourcing arrangements ... can actually cost a firm more in the long run," says Adam Yatsko, branch manager of Robert Half Technology, an IT staffing firm in Westwood, Calif. Hidden costs include those associated with vendor selection, layoffs, contract management and vendor turnover, he says.

Fueling the discontent are figures such as these from Forrester Research: By 2005, the firm estimates, 600,000 U.S. jobs — whether IT, back office, customer service or sales — will move to countries such as China, India,

the Philippines and Russia. By 2015 the number will climb to 3.3 million, Forrester says.

But now, offshore outsourcing accounts for only about 3% of IT jobs, contends Harris Miller, president of the Information Technology Association of America. Jobs are being lost, but the numbers are overblown, he says. People also fail to consider the impending shortage of high-skill workers in the U.S. as baby boomers reach retirement age, he adds.

McKinsey Global Institute (MGI) reports that at current productivity levels, the U.S. will need 5%, or 15.6 million, more workers by 2015 to maintain its current ratio of

workers to the total population and current living standards. So despite job loss fears, the U.S. will need more workers by 2015, MGI predicts. MGI also estimates that for a number of reasons — including reduced costs for consumers and new revenue from sales in offshore countries — offshore outsourcing actually creates value for the U.S. Every \$1 that a domestic company diverts offshore creates \$1.12 to \$1.14 in value retained in the U.S., MGI says.

Getting ahead of the issue

When a company outsources a process, it must still manage and control it internally, and that requires key people on staff. One huge insurance and financial services company that decided to outsource all IT operations offshore gave pink slips to its entire IT staff before realizing its error, Steve DeLaCastro, a New York outsourcing practice leader for Tatum, recalls. "About 70% of those people were rehired at an average 40% more than when terminated."

Experts offer other suggestions to temper the discord that offshore outsourcing can trigger:

- Bring together key stakeholders and compare benefits and risks, says Stephanie Moore, a vice president at Forrester.
- Consider the vendor's services, metrics, management, logistics and more. "Beware the offshore vendors that come into your company and talk only price. They have sweatshop stamped all over their heads," DeLaCastro says.
- Document verbally and in writing, DeLaCastro says. Set very specific expectations of performance, Miller adds.
- Under the "looking-out-for-your-job" category, beef up your business and vendor management skills. "IT management in the future is not going to be about managing programmers or network technicians," she cautions. "It's going to be about managing service contracts."

Marks is a freelance writer in Denver. She can be reached at sjmarksco@aol.com.

STRUGGLE SYNOPSIS

The issue: U.S. companies are turning to offshore outsourcing of white-collar IT jobs to handle projects less expensively and more quickly, while domestic IT unemployment remains a problem.

Outlook: A number of researchers have come out with growth projections for offshore outsourcing. Forrester Research estimates that by 2005, 600,000 U.S. jobs — whether IT, back office, customer service or sales — will move offshore.

Enterprise impact: Proponents point to drastic cost savings, as well as superior quality processes and work. They say that offshore outsourcing ultimately will lead to the creation of more U.S. jobs and greater value for the economy. Opponents cite continued high IT unemployment and internal struggles over who directs and controls offshore projects.

Challenged by

Most IT executives still haven't figured out how they're going to get data storage and access in line with the law.

BY BOB VIOLINO

It's compliance time, and that means enterprise IT executives should know where and on what type of media corporate data is stored, and how long it needs to be retained. But by all indications, most everyone still is struggling with how to get in line with the new regulations governing business practices.

"In general, IT and business professionals across a variety of industries still don't even know how to begin discussing compliance as a business issue," says Pete Gerr, a research analyst with Enterprise Storage Group. "Is it the CIO's problem? Is it the [vice president] of IT's problem? Is it a storage problem? Compliance touches all of these groups and more, so it requires knocking down the communications barriers that normally exist between IT and the rest of the business."

Companies know they can't take compliance issues lightly. They can incur steep fines for failing to comply, and IT and other corporate executives can face jail time over non-compliance.

"Practically every IT executive gets hit by this somehow," says Johna Till Johnson, president of Nemertes Research and a *Network World* columnist. "If someone touches [data] he shouldn't have, IT executives could be sent to jail. People are starting to slowly realize that they are personally exposed."

Regulatory witch hunts

The stakes certainly are high and the threat very real, Gerr agrees. "Regulatory bodies in certain industries like financial services, and increasingly healthcare and pharmaceuticals, are on a compliance witch hunt," he says. "They've got the companies that must comply with these regulations on the defensive." (The Sarbanes-Oxley Act and the Health Insurance Portability and Accountability Act, which govern financial services and healthcare, are the most notable of the compliance regulations, but dozens of others affect a variety of industries.)

A sense of urgency pervades an e-mail compliance project underway at The Mony Group, says Brian Hust, IT project manager at

the New York financial services firm. Mony typically had stored e-mails on optical disks for 60 days. But the Securities and Exchange Commission (SEC) mandates that e-mails be stored on write-once read-many (WORM) media and retained for three years. So Mony now is analyzing e-mails and converting them to a new WORM storage system from EMC at a cost of about \$400,000.

"We've seen the headlines about companies in our industry receiving significant fines for not retaining e-mail," Hust says. "We're going to look for solutions to avoid that."

Keeping in line with the law won't be easy, even for the most diligent. The problem is that requirements keep changing.

Gerr cites a three-month Enterprise Storage Group study of four industries and the regulations that affected each: "We read the regulations, spoke with the individuals and groups that drafted and enforce the regulations, and spoke to end users that are being called to comply. The most persistent conclusion we draw from our research into these regulations is that they are in constant flux and that we are simply witnessing the tip of the iceberg with respect to the impact compliance will make."

Marked by ambiguity

Understanding what's required to main-

tain compliance vs. what's recommended or suggested also presents a challenge, Gerr says. "The regulations are notoriously vague and ambiguous as to how to achieve compliance, [and] what technologies or media types are acceptable," he says. "The majority of the regulations as written today don't have a testing or certification program for compliant solutions, so it's very difficult for the end users to even know when they're exposed."

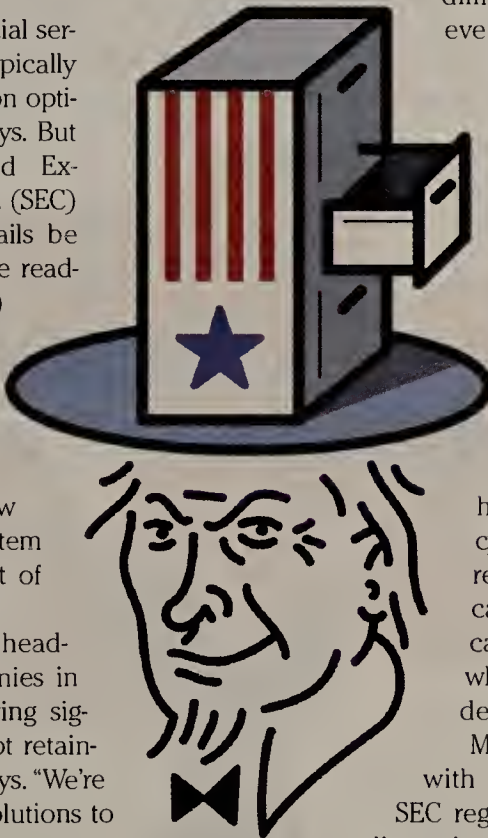
Throwing hardware at the problem isn't an answer, says Sheila Childs, chairman of the Storage Networking Industry Association, a group representing storage vendors and users. "Companies must have some understanding of the regulations. They need to look at things like how to preserve the accuracy of records, to ensure that records are in a format that can't be modified. Then they can make decisions about what kind of technologies to deploy," she says.

Mony, which must comply with Sarbanes-Oxley and the SEC regulations, is handling compliance in stages, says Jay Cohen, chief corporate compliance officer at the firm. First comes the supervision and retention of e-mail from thousands of employees and associates. Analysis of other electronic files will follow. Cohen, who's working with IT to determine storage and other needs for compliance, says he doesn't know how long overall compliance efforts will last.

"You have to figure out what in your electronic records is a business record or a legal record that might have content that has to be retained," Cohen says. "That's a big, big challenge."

And one that will persist for years, Gerr says.

Violino is a freelance writer covering business and technology. He can be reached at bviolino@optonline.net.



STRUGGLE SYNOPSIS

The issue:

Managers must deal with what data needs to be retained, how long it needs to be kept and on what storage media, and who has access to certain data. Adding to the difficulty is that some of the regulations are vague on storage requirements.

Outlook: Most companies will find compliance difficult, although complexity varies depending on the size of the organization and industry. Analysts say those companies that thoroughly examine the regulations to determine how they affect the organization — then coordinate compliance and IT efforts — likely will be the most successful.

Enterprise impact:

The impact will be significant because companies will need to analyze current storage environments and in some cases revamp systems to help compliance efforts. The penalties for non-compliance can be steep, including possible jail time for executives and financial penalties reaching into the multimillion-dollar range for companies.

ILLUSTRATION BY FELIX SOKWELL



Butting heads over

EbXML battles Web services over which will become the e-business platform of choice.

BY PAUL DESMOND

Companies looking to conduct complex business transactions might expect Web services to enable those efforts. But along the way, they might find some business partners adamant about using another technology for the same purpose, electronic business with XML.

Under development since the late 1990s, ebXML is a multifunction e-business framework that includes a secure document-messaging component and a methodology for constructing those documents. Web services, of course, fits a similar description, although the degree to which they help businesses conduct more than the simplest of online transactions is one subject of the Web services vs. ebXML debate. Another topic is whether a debate is needed at all. A number of experts say the two technologies are complementary, because ebXML can, and does, employ Web services underpinnings such as Simple Object Access Protocol (SOAP).

"People are seeing they can use these things in combination," says David Webber, an independent consultant who chairs the Organization for the Advancement of Structured Information Standards' (OASIS) Content Assembly for ebXML technical committee and co-authored the book, *ebXML: The New Global Standard for Doing Business*. He argues that Web services are king for informational sorts of transactions, such as checking stock with a business partner. But the purchasing act requires systems that can communicate on a more meaningful level, with proper security. All of which ebXML provides, he says.

"People think of ebXML as a holistic framework rather than having multiple aspects that can be adopted independently," says Joseph Chiusano, senior consultant with Booz Allen Hamilton in McLean, Va., and a member of the OASIS ebXML technical committee. While Web services didn't really exist when ebXML was conceived, OASIS and UN/CEFACT, an international standards body that also plays a role in ebXML development, have since made multiple efforts to incorporate Web services components in ebXML. Those include an interface that enables ebXML messages to be carried via SOAP, and the ability to register and discover Web Services Description Language (WSDL) documents.

But John Radko, chief architect of global technology operations at e-business service provider Global eXchange Services, sees the power struggle as quite real. "The conflict is simply this: If you use one, you're not using the other." While it's true that the same company might employ ebXML and Web services for different applications, the two don't interoperate. If you want to send a trading

and a message ID, for tracking. "EbXML does all that great; it was designed from the ground up to do that," Radko says. Work is underway in standards bodies, including the Internet Engineering Task Force and World Wide Web Consortium, to define the same attributes for Web services.

So why not simply use ebXML document formats and send them over a Web services-based transport? For one, ebXML uses a component-based approach toward building documents that Radko says is technically sophisticated but difficult to work with. "If you're going to write a letter, you don't think, 'I need two address components, a salutation component, a body component and so on,'" he says. "People want to be able to find a purchase order and fill that out."

Along vendor lines

Large vendors, too, are picking sides in the debate. "Sun is a big backer of ebXML, so that tells you who is not," Chiusano says.

Radko also notes that Web services suite vendors, including IBM, Microsoft and Oracle, don't have strong ebXML offerings. This causes independent software vendors concern over dedicating resources to ebXML.

But the ebXML camp can cite at least a couple of reasons why it is the better choice, such as interoperability tests, spearheaded by Drummond Group, a consulting and testing firm. As of early November, more than a dozen products from 10 vendors were certified as interoperable, suitable for use in applications such as one defined by the Centers for Disease Control and Prevention for exchanging documents relating to public health. And ebXML enjoys widespread international adoption, notably in Asia.

Chiusano expects OASIS to promote the notion that companies don't have to choose between ebXML and Web services, and it might add more Web services components to ebXML, such as a binding to WSDL.

Still, Radko cautions companies to remain forward-thinking. "If you want to go with ebXML, make sure your vendor can support Web services, and vice versa. Something new is going to come along eventually and you'll have to upgrade."

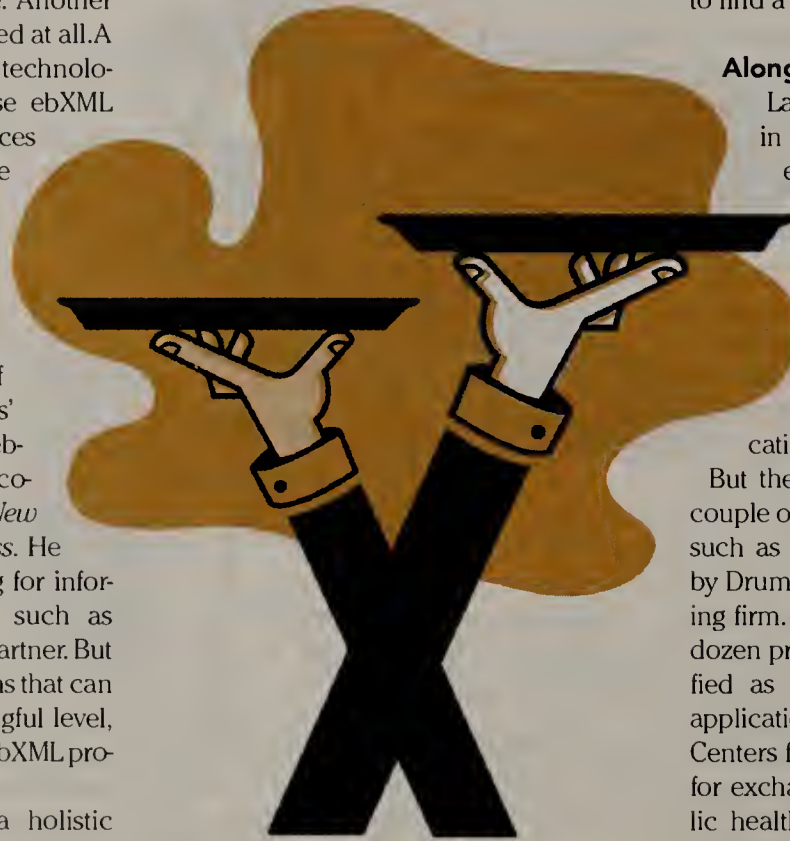
Desmond is president of PDEdit, an IT publishing firm in Framingham, Mass. He can be reached at paul@pdedit.com.

STRUGGLE SYNOPSIS

The issue: Users must choose a platform for conducting business online — Web services or the older but more established electronic business with XML (ebXML). Sun is the only large vendor with a certified interoperable ebXML offering, although at least nine smaller e-commerce providers and software vendors offer ebXML certified products. IBM, Microsoft and Oracle favor Web services.

Outlook: Resolution is questionable. The ebXML camp likely will try adding more Web services underpinnings, while Web services standards groups will strive for agreement on document format structure.

Enterprise impact: Depending on the vertical industry, users might need to support at least some elements of each technology. The good news is this dual support might not be terribly onerous given that ebXML and Web services share some components.



partner a message using ebXML, the partner has to support ebXML, he says. The same is true for Web services.

Radko says he sits in on numerous meetings in which the ebXML vs. Web services debate rages on. Members of the auto industry, for example, are debating whether to use ebXML document formats or those that are more closely aligned with Web services, such as WS-Attachments. This Microsoft-developed specification is at least the third attempt at defining how to send files back and forth in a Web services environment.

He says such a specification must have four basic attributes: to, from, message type

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Carriers keep on carping

The FCC's Triennial Review Order delivers a decisive blow to the beleaguered long-distance carriers, but they're not giving up the fight.

BY JENNIFER JONES

Although the FCC's August Triennial Review Order confirmed what many had expected all along — that the feds would not force incumbent local exchange carriers building broadband access infrastructures to roll out the welcome mat for competitors — the decision still dealt a decisive blow to the interexchange carriers and their competitive local exchange carrier allies. Adding to the sting was the FCC's decision to let the ILECs out of requirements to keep their transport facilities open to competitors.

The IXC's, which don't have the infrastructures to offer local broadband services, had held a glimmer of hope that the FCC would force the ILECs to share new broadband platforms just as the Bells had been required to unbundle voice networks under the Telecommunications Act of 1996. Now that those hopes have faded, some experts predict market consolidation, with ILECs eating up the weaker IXC's. The on-off talks between BellSouth and AT&T, which surfaced again in late October, seem to support this notion.

"For IXC's, the broadband revolution has a pretty big downside and no significant, visible upside," says Thomas Nolle, president of consultancy CIMI.

But the IXC's aren't going down without more sparring. Already the next phase of the telecom fight is unfolding in court, as the two sides haggle over widely perceived ambiguities in the Triennial Review Order.

"I don't know if the FCC has cut the baby in half, but it has published a decision that was less than precise in some areas," says Bill Wilde, CTO of eXchange @ 200 Paul, a carrier-neutral collocation facility in San Francisco.

For example, the FCC's new unbundling requirements do not include dark fiber loops — meaning the ILECs must keep these open for use by competitive carriers. But the order includes an exception for cases in which state studies show ILEC competitors would not be impaired if they didn't have access to



these loops. If portions of a network in question lie outside an area of study, will the transport line be subject to unbundling?

Challenging the FCC decision will keep the IXC's in the ring for a while, says Nolle, who cautions that litigation might not be the wisest move for their long-term security. "Carriers are on a defensive mission, where they are using the courts and [any previous ground they gained through] unbundling, in effect, to perpetuate the status quo," he says. Rather, they ought to be focusing their energies on turning into broadband content and application providers, Nolle says.

Free market proponents advocate letting

all players duke it out on the streets. They point to activity in the enterprise sector as proof that government should take a hands-off position. Adam Thierer, director of telecommunications studies at Cato Institute, a public policy research organization in Washington, D.C., cites as evidence the plethora of facilities-based carriers offering services to businesses in urban markets.

Thierer insists that instead of prescribing unbundling guidelines and other regulations, the FCC should let ILEC-IXC competition along with pressure from cable companies nudge the carriers toward more broadband investment. "What's wrong with cross-platform competition?" he asks.

Beneficial as a whole

Still others think the FCC order benefits the telecom market as a whole. "After the obligatory two weeks of ranting and raving that follows every FCC decision, we saw an uptake

... in the number of requests for proposals," says Perry Kamel, general manager of Siemens Next-Generation Carrier Networks. He notes that during last year's "nuclear winter in telecom," carriers neither invested in legacy networks nor made any progress toward building IP infrastructures. But now he sees a "reinvigorated emphasis" on

access and optical products, particularly those that would enable higher-bandwidth "triple-play" voice, data and video services, and "a marked increase" in activities related to softswitch-enabled applications and services for converged networks.

With outstanding policy and legal decisions compounded by Wall Street's need to rebuild its trust in the telecom sector, a complete thaw could take years. "About 2010, things will begin to come together," Nolle says. "Regulation does not create opportunities, but it does create winners and losers."

Jones is a freelance writer in Vienna, Va. She can be reached at jjwriterva@aol.com.

STRUGGLE SYNOPSIS

The issue: The FCC decides that ILECs don't have to give competitors access to new broadband infrastructures in a move some think signals sure demise for long-distance carriers. Doing battle are BellSouth, Qwest, SBC and Verizon against AT&T, MCI, Sprint and competitive local exchange carriers.

Outlook: Legal and regulatory battles will play out over the next several years, while carriers try to reassure investors that broadband rollouts will yield adequate returns.

Enterprise impact: Enterprise buyers could see modest price increases for OC-3 through OC-192 services, but overall both sides will work mightily to win corporate accounts.

the **POWER** issue

EXECUTIVE PROFILES



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PERSONAL POWER

Our guide to techniques and tools for boosting your corporate power.

Power these up!

Cool Tools Editor Keith Shaw showcases these five devices as on-the-job power boosters:

1 Handspring Treo 600

USB Flash devices:

2 Forward Solutions

3 Kanguru Solutions

4 StealthSurfer

5 APC TravelPower Case

See story at right.

Blogging for power

Online editor Adam Gaffin scouts out must-read tech Weblogs for IT professionals who want to pump up their network knowledge. **Page 71.**

Power these

Cool Tools editor Keith Shaw picks five devices that can make you more powerful on the job.

BY KEITH SHAW

Gadgets get a bum rap — they're often thought of as executive toys or useless trinkets that exist merely to boost young executive egos. What could be more annoying than watching these yuppies show off the latest Titanium-embossed gizmo that can play the theme from "Chips," as if they figured that owning the gadget will get them the corner office? Let them have those — here are five devices offering increased productivity, which we prefer over gloss.

Handspring Treo 600. When converged devices came out, the naysayers looked at their bulkiness and stuck with their tiny cell phones. After a few revisions, Handspring has come out with a device that is small enough for those "tiny cell phone" snobs, yet powerful enough for you to get your work done.

The Treo 600 offers a lot to like. It comes with an embedded keyboard that speeds up your data input, whether it's wireless e-mail or a new document. The keyboard is backlit so you can work in the dark. Like previous Treo devices, the 600 works on the Palm OS, our favorite mobile operating system. And the cell phone includes not only a speaker, but also a conference calling feature that lets you patch in multiple colleagues at once.

The Treo 600 is available on the GSM/General Packet Radio Service wireless networks run by AT&T Wireless, and T-Mobile, but we preferred the Sprint model, which runs on the CDMA 1x network, because it offers more coverage for making cell calls, and the data speeds are a bit faster. The Sprint version costs about \$500 (depending on rebates), plus monthly voice and/or data service.

With the Treo 600 in your pocket, you'll become more productive — and productivity produces power.

USB Flash — the next generation.

In the past, USB Flash devices served as floppy disk replacements. Plug into a port,

transfer files, move to the next computer, plug in and transfer files. But now, manufacturers are loading these devices with useful applications.

Forward Solutions' Migo device (between \$150 and \$200, depending on storage space) replicates the desktop of your notebook or PC, and stores a copy of your documents and data from the past 30 days. Instead of figuring out what files you need and manually moving them over to a USB Flash device, the Migo software does it for you during a synchronization process. Just move to another USB-enabled desktop (such as an Internet kiosk), and voilà, the look, feel and the last 30 days of your documents appear on the screen. You also can transfer Internet-based e-mail, and Migo is working on a method to provide Exchange-based e-mail users access to their e-mail.

Stay tuned.

Another notable USB Flash device is **Kanguru Solutions' Kanguru Wizard** (\$50), which includes software that can make your data "disappear." When you install the device on a

computer, you can move confidential data into a "virtual drive" on the PC. When you remove the Wizard device, the virtual drive disappears, and any prying eyes won't be able to find

the files on the computer.

The third USB device we like is **Stealth-**

Surfer's StealthSurfer (between \$50 and \$130, depending on storage space). Its customized Netscape Web browser can be used on an Internet kiosk or other public computer. StealthSurfer will keep your private information from being left behind on that public machine. Like all the USB devices, you also can use the StealthSurfer for file storage and transfer.

All three of these devices let you leave your notebook at home while keeping your data with you (and secure). More power than that is hard to come by.

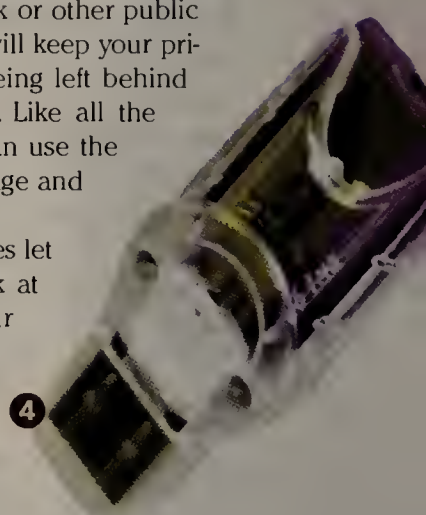
APC TravelPower Case.

Nothing says power like being powered up at all times. If you're carrying around a notebook, cell phone, PDA, etc., then you are always worried about running out of power.

The TravelPower Case (\$99 or \$129, depending on model) from APC is an innocent-looking notebook bag that includes power adapters and cords for charging all of your devices through



one power outlet (be that a car adapter, airline adapter or standard AC plug). The bag includes adapter plugs for most standard notebooks, and it also can hold all your papers and other business paraphernalia. If you travel, this power bag will keep you charged up and ready to go. ■



Blogging for power

Online editor Adam Gaffin scouts out the essential Weblogs for pumping up your network knowledge.

BY ADAM GAFFIN

Each morning, I fire up my RSS aggregator and go through the latest headlines from enterprise-related Weblogs. Here I've pulled together a list of the 10 I've come to consider essential reading. Their bloggers do a good job explaining the fields they specialize in, offering unique insights or information you might not get elsewhere. (Reach any of these blogs from Network World Fusion, www.nwfusion.com, by plugging in the listed DocFinders.)

Phil Wainewright's Loosely Coupled Weblog

Wainewright focuses on "planning, deploying and managing loosely coupled business-process automation." In practical terms, that means a lot of discussion about Web services. Now, as a relatively new set of technologies and standards, Web services can lead to minefields of misinformation. Wainewright cuts through the vendor hype and tells you what to look out for — and what all that acronym gobbledygook really means (or doesn't, as the case may be). He even provides a Web services glossary. **DocFinder: 9021**

Dave Winer's Scripting News

Winer merits distinction as one of the fathers of today's "blogosphere" for helping come up with RSS, which is the XML-based content-sharing specification many Weblogs use, and for building Radio Userland, a popular Weblog writing application. Love him or hate him (there's not much of a middle ground when it comes to Winer), his Scripting News is a must-read if you're thinking about the future of information distribution and content sharing on the Internet. **DocFinder: 9023**

Phil Windley's Enterprise Computing Weblog

Windley, the former CIO for the state of Utah, knows IT. His Weblog covers the breadth of stuff today's IS and networking pros need to keep up with — from security to network architecture to management (of devices and staff). As you might expect, he often discusses government networking issues, but also has a strong interest in identity management and network security in general. **DocFinder: 9024**

Dan Gillmor's EJournal

Gillmor, a columnist for *The San Jose*

Mercury News, was one of the first mainstream writers to embrace Weblogs. More important, his daily writing explores the nexus between technology, politics and government policy. **DocFinder: 9022**

Misbehaving.net

Misbehaving.net is a group effort about, and written by, women in computing. Writers not only discuss issues such as the lack of role models and mentors for women in the field but also pose questions about the basic role of technology: "Do some engineers design technology to impress other engineers with how smart they are, but are essentially solving non-problems?" **DocFinder: 9025**

Troy Jessup's Security Blog

Unlike many Webloggers, Jessup isn't compelled to post something daily. But his thoughts on network security are worth the wait. Many of his posts are actually challenges to readers to make their networks more secure. A sample:

"Miscreants compromise our networks using some of the oldest and most basic forms of compromise. Network sniffing, brute force and stupid things like that. The reasons that miscreants are not dedicated to working around the latest in technology is because the old stuff still works as good or better than it ever did."

"Do you still POP your e-mail? IMAP? Are they secure? Even the people with the most sensitive of access it seems fail to understand how insecure some of their communications are, or maybe they do and just don't care." **DocFinder: 9026**

Roland Piquepaille's Technology Trends

Piquepaille is a classic blogger, ferreting out interesting stuff, then links to it. Only what he specializes in is exotic, futuristic stuff that really could someday become common-

place. A recent topic: robots with "feminine intuition." **DocFinder: 9027**

Glenn Fleishman's Wi-Fi Networking News

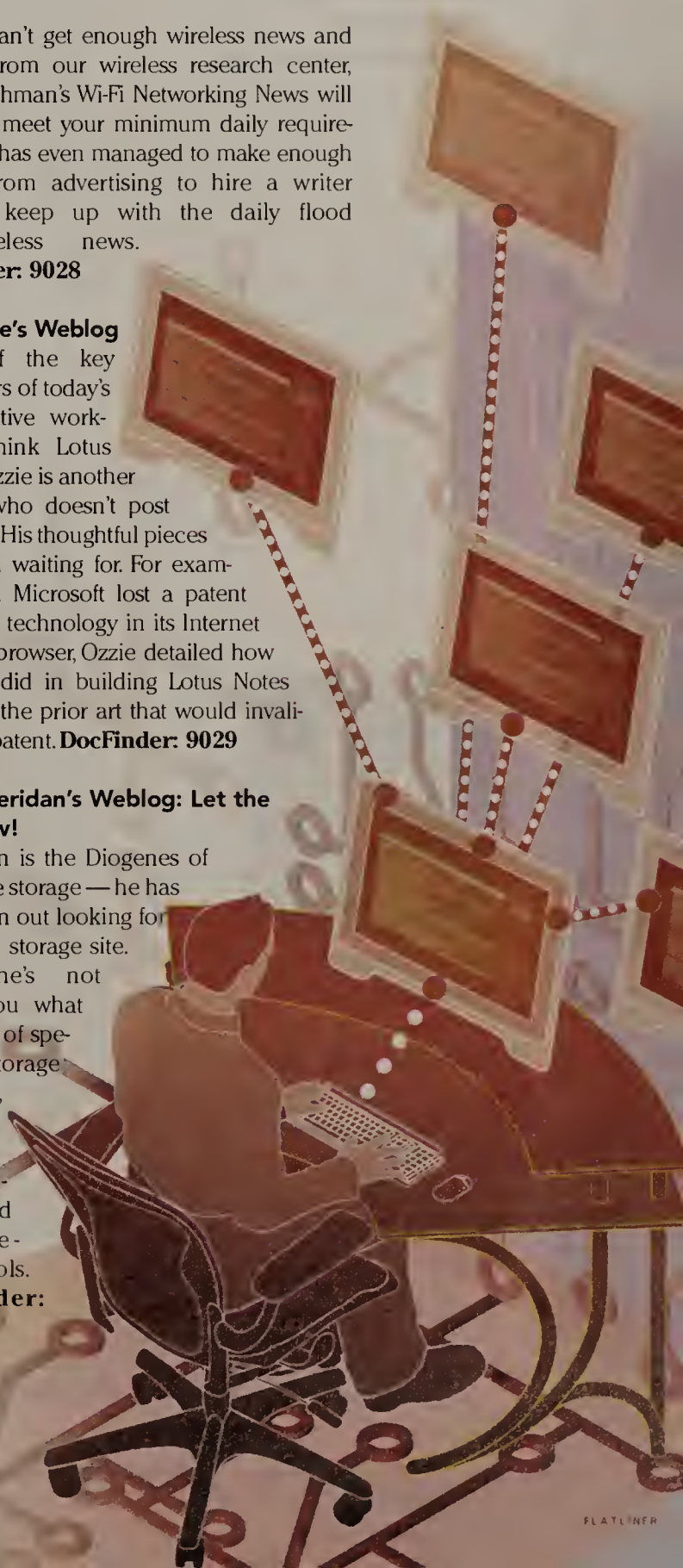
If you can't get enough wireless news and analysis from our wireless research center, then Fleishman's Wi-Fi Networking News will help you meet your minimum daily requirement. He has even managed to make enough money from advertising to hire a writer to help keep up with the daily flood of wireless news. **DocFinder: 9028**

Ray Ozzie's Weblog

One of the key developers of today's collaborative workplace (think Lotus Notes), Ozzie is another blogger who doesn't post every day. His thoughtful pieces are worth waiting for. For example, when Microsoft lost a patent case over technology in its Internet Explorer browser, Ozzie detailed how work he did in building Lotus Notes might be the prior art that would invalidate the patent. **DocFinder: 9029**

Dann Sheridan's Weblog: Let the data flow!

Sheridan is the Diogenes of enterprise storage — he has his lantern out looking for one good storage site. When he's not telling you what he thinks of specific storage products, he is discussing new security and management tools. **DocFinder: 9030**



the **POWER** issue

EXECUTIVE PROFILES



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message

Power in the

Advertising surrounds us. Is it hitting home with you? Find out by matching the slogan to its network vendor.

BY BETH SCHULTZ

"Reach out and touch someone." For most people, these five simple words are synonymous with AT&T. And they don't bring to mind an enormous, impersonal phone company. They inspire a positive image of AT&T helping people to share happy times and good fortune with each other at the touch of a button. "Reach out and touch someone" will go down in history as an example of the best in corporate branding.

So, too, will Microsoft's "Where do you want to go today?" This widely recognized ad slogan delivers a powerful message about the ease of computing and casts Microsoft in a positive light because of it.

In fact, these two technology taglines recently were inducted into the Advertising Slogan Hall of Fame for 2003, kept by AdSlogans.com, a global slogan database. They were the only two tech slogans among 29 to become 2003 Hall of Famers.

Will Sun's renowned "The network is the computer" slogan one day be recognized as one of the most powerful messages of its time, or maybe its current "We make the net work"? More importantly, are other tech taglines out there hitting home with you, their intended targets — even subliminally? Match up these 40 ad slogans to their vendors for a look at how powerful their messages might be. ■



POWER MATCH-UP

1. The Power of Being There.	A. 3Com
2. The Power of Performance.	B. APC
3. This is the power of the network. Now.	C. ATTO Technology
4. Power Behind the Storage.	D. Avaya
5. Powered by N.	E. Avocent
6. Reach a higher plane of communication.	F. BellSouth
7. Can you see it?	G. Broadcom
8. Networks that work smarter. Networks that work harder.	H. Brocade Communications
9. We secure the Internet.	I. Check Point
10. Do more with less.	J. Cisco
11. The unwired office starts here.	K. Cyclades
12. It ain't braggin' if you can do it.	L. Dell
13. Be sharp.	M. EMC
14. Thinking you can build on.	N. Enterasys Networks
15. Listening. Answering.	O. Extreme Networks
16. Not just talk.	P. EEye Digital Security
17. Spirit of service.	Q. F5 Networks
18. Speed. Intelligence. Confidence. Simplicity.	R. Foundry Networks
19. Vulnerability is over.	S. HP
20. Imagine it. Done.	T. IBM
21. Keeping People and Information Connected.	U. Intel
22. Solutions that fit. Easy as - - -.	V. Lucent
23. The best-run businesses run - - -.	W. Microsoft
24. Work smart. Work - - -.	X. Netgear
25. Where information lives.	Y. Network Associates
26. Legendary Reliability.	Z. NextiraOne
27. Everybody's connecting.	AA. Nokia
28. Possible made practical.	BB. Nortel
29. One - - -. Many Solutions.	CC. Novell
30. Control your world.	DD. PMC-Sierra
31. Connecting people.	EE. Quantum
32. Everywhere with Linux.	FF. Qwest
33. Make progress every day.	GG. SAP
34. Business without boundaries.	HH. Sharp
35. - - - invent.	II. Sony
36. Connecting the globe.	JJ. Sprint
37. Your network. Our business.	KK. SunGard
38. The intelligent platform for networking storage.	LL. Unisys
39. Switching to the Nth Power.	MM. Verizon
40. Connecting everything.	NN. XO Communications

Answers: 1-E, 2-R, 3-J, 4-C, 5-CC, 6-D, 7-T, 8-V, 9-I, 10-W, 11-U, 12-Z, 13-HH, 14-DD, 15-F, 16-NN, 17-FF, 18-EE, 19-P, 20-LL, 21-KK, 22-L, 23-GG, 24-II, 25-M, 26-B, 27-X, 28-A, 29-JJ, 30-Q, 31-AA, 32-K, 33-MM, 34-BB, 35-S, 36-O, 37-Y, 38-H, 39-N, 40-G



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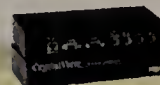
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- ◆ Up to 1600 x1200 resolution
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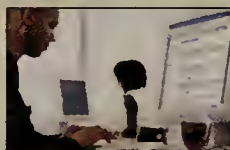
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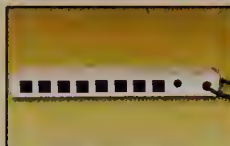
Extend Your IT Reach *Beyond* The Server Room


Kaveman 16 - Allows up to 6 simultaneous users connecting 16 servers

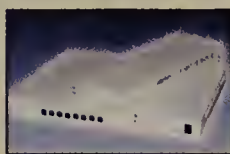
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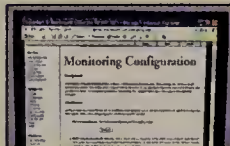
Kaveman monitors server functions and notifies you before any server problems become critical.


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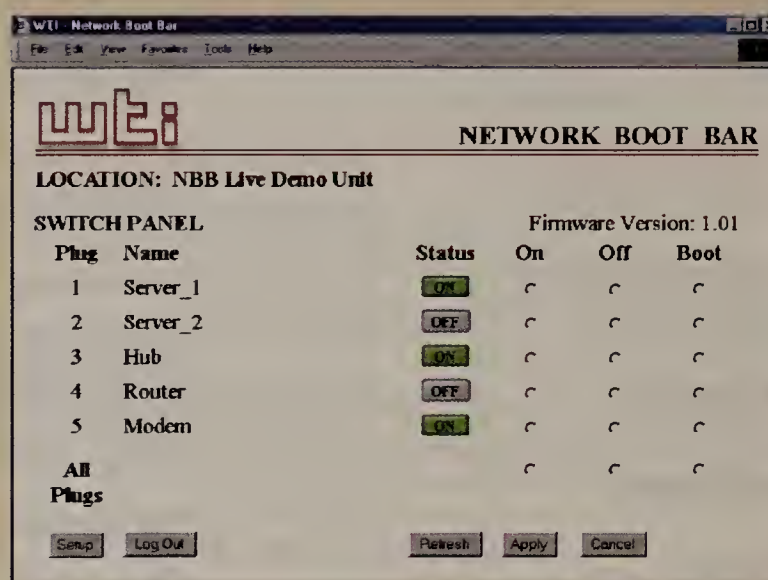
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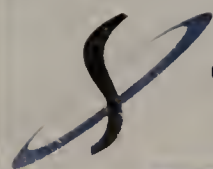
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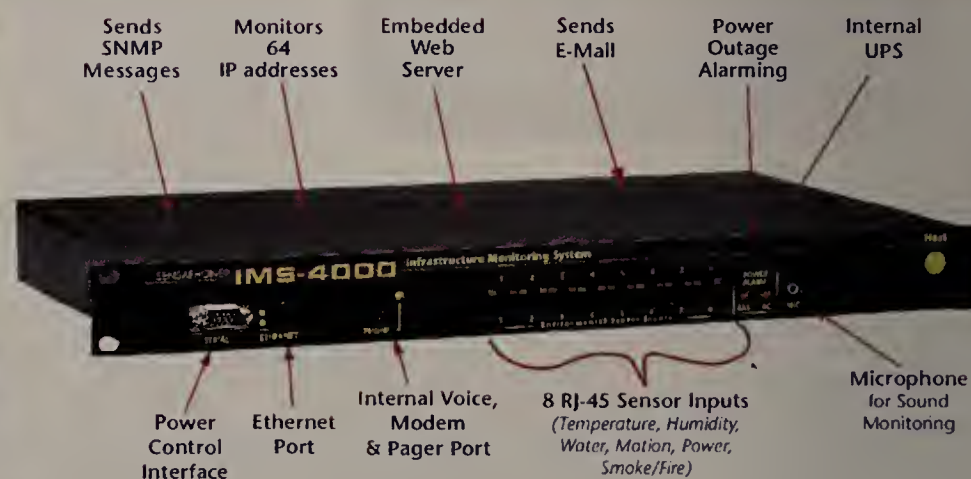
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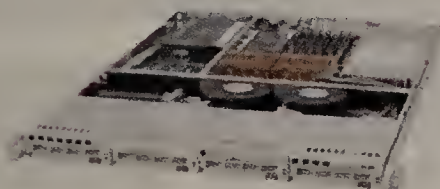
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SOFTWARE ENGINEER (2 positions) to provide on-site consultancy in design, development, analysis and testing of web-enabled applications software using Visual C++, Java, PL/SQL, JSP, JavaScript, HTML, XML, Oracle, ASP, VB Script, TCP/IP, HTTP and Visual InterDev in UNIX and Windows environment; develop applications with MFC, .Net, C#, ASP.NET, ADO.NET, Active-X, COM and XML; develop embedded based system using WinCE, pSOS and similar RTOS; use ADABAS/Natural languages, ISO implementation and digital video-audio fields. Require: Bachelor's in Computer/Electronics Engineering and five years experience in the job offered or any experience providing skills in described duties. 40% travel required to client sites within the United States. Salary: \$67,000 per year, 40-hour week, M-F. Mail resume to: President, K2 Technologies, Inc., 2107 Franklin Drive, Papillion, NE 68133.

Design Engineers (ASIC/FPGA): Design, develop, code, test and implement Hardware Systems & Computer Chips in Verilog, VHDL, Specman utilizing ASIC/FPGA design tools, Perl, Unix, C, Assembler & rel. tech. Prevailing wage & benefits. Send resume to HR, 5555 Oakbrook Parkway, Ste. 280, Norcross, GA 30093. EOE.

Prog/Analysts to analyze, design, develop and implement client server, web apps using C, C++, Java, Swing, XML, HTML, JDBC, HTML, JavaScript, JSP, ASP, EJB, J2EE, Oracle, PL/SQL, WebSphere, Weblogic under UNIX/Windows OS; documentation program development, logic, coding and corrections; provide customer support and troubleshoot. Require: BS or foreign equiv. in CS/Engg.(any branch) with 2 yrs of exp. in IT. Travel Involved. Comp.Salary. F/T. Resumes to: HR, SynergyAmerica, Inc., 6340 Sugarloaf Parkway, Ste 140, Duluth, GA 30097.

Technical Recruiter: Broomall, PA. Shortlist candidates from d/base & internet search, technically eval candidates qualif & exp, conduct tech'l test & interviews, conduct ref check, client interaction & Feedback, maintain documentation w.r.t. employees, dvlp new clients for placement, negotiate compensation, recruit & place qualified candidates w/clients. Must have degree w/min 3 yrs exp in IT Technical Recruitment. M-F, 40 hrs/wk. Send resume to Hera Tech Inc., 838 Sussex Blvd., Broomall, PA 19008.

Vice President, Network Engineer: Must have bachelor's degree in business or computer information system. Location: Wilmington, DE. Fax CV to Brandywine Medical Management at 302-984-2575.

Software Engineer-Scientific - Design, & develop sw for mtls char & Xstlog Create GUI & sci code to conduct computations req. for XRD. Create Xstlog tools & perform cust support. Require PhD or equiv. in Chem., Phys or Mat. Sci. Hands-on exper with the xprmtl/comp tools of XRD incl single xstl, quasi-periodic & polyxstln mtls. Proficient VB, Java, C, C++ Need 6 yrs work/ed combined; expmc in algorithm dev., graphics & web programming & applets (expnc to be proven by programs submitted); demonstrate ability to perform adv. research through publs in referred sci journals. Salary \$80K. Respond: PO Box 791, Livermore CA 94550. Interview & Loc: Livermore, CA.

SOFTWARE ENGINEER to provide on-site solutions for object oriented design for client/server and web based software applications using ASP.Net, C3, VB.Net, J2EE, VB Script, Java Script, HTML, XML, XSL, Web Services, SQL Server, Oracle, Access, Visual Basic, C/C++, in Windows and Web Reports. Require B.S. in Information Systems/Computer Science and six months experience in the job offered, or any experience providing skills in the described job duties. Coursework must include e-commerce systems and website management. 40-hour week, M-F, competitive salary and benefits. Apply with resume to: Director of Information Systems, Warranty Acceptance Corporation, 4400 Govt. Blvd., Mobile, AL 36693.

Computers-Programmer Analysts needed. Seeking qual. candidates possessing BS or equiv. and/or rel. work exp. Part of the req. rel. exp. must include 3 yrs. working with Cognos, Oracle Database and Forms/Reports & Livelink. Duties include: Design software architecture & develop software products; Provide user support; Analyze data requirements & use case development for software solutions; Work with Java, Cognos, XML, Oracle Database and Forms/Reports, ETL tools, Asynchronous Messaging and PJC Development. Fwd. resume & ref. to TOSS WA Corporation, Attn: HR, 1000 Louisiana, #6800, Houston, TX 77002.

Data Communications Analyst: Research, test, evaluate and recommend data communications hardware, software and upgrades. Send resumes listing position to: Human Resources - Data Communications Analyst Position, 4636 Hilton Corporate Drive, Columbus, Ohio 43232. EOE/F/M/V/D/Legal workers only please.

Seeking qualified applicants for the following positions in Memphis/Collierville, TN: **Senior Project/Process Analyst**. Perform planning and analysis for complex projects, processes and/or ongoing programs. Requirements: Bachelor's degree or equivalent in business, computer science, MIS or related field plus 5 years of experience in planning, project management or process analysis of IT projects. Experience with CVS also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

Network Programming Engineer: Major responsibilities include setting up Internet servers & setting up networks. Analyzing user needs and developing software solutions. Developing electronic systems for commercial use. Designing, programming and implementation of e-commerce applications. Bachelor's Degree in Engineering, Computer Science or Telecommunications. Master's Degree in Management Information Systems or Computer Science. At least two years of experience in network programming, Microsoft transaction servers and web application development. Experience in using COM/DCOM components in Windows environment. Must have proof of legal authority to work in the United States on a permanent basis. Contact President, Keepflo Technologies, 1549 Fencorp Drive, Fenton MO 63026.

F/T Instructional Technology Support Specialist. Responsible for performing and arranging repair and replacement of technology equipment and network in the assigned division. Research and develop solutions to hardware/software issues. Educational background must have included training in basic network functions, hardware and software, Power Quest Deploy Center, Windows CE/IPAQ support, configuring wireless 802.11b technology, Banner, Peoplesoft and Windows 2000 Server. Must have a BBA in Computer Based Information Systems. Salary: Competitive. Send resumes to: Dr. Dwight Call, GA College & State Univ., CBX 049, Milledgeville, GA 31061.

System Analysts to analyze, design and implement e-commerce and other solutions using SAP R/3, ALE, IDOC, EDI, Gentran, Mercator on Unix/Windows OS; perform gap analysis of customer EDI reqs and business apps; create/maintain basic EDI Maps, EDI transactions; troubleshoot EDI errors; install/configure Gentran Server; document program development process. Require: BS or foreign equiv. in CS/Engg. (any branch) & 2yrs exp. in IT. Travel involved. High Salary. F/T. Resumes to: HR, Global IT Solutions USI, Inc., 600 Stevens Port Drive, Ste 125, Dakota Dunes, SD 57049.

Seeking qualified applicants for the following positions in Memphis/Collierville, TN: **Senior Project/Process Analyst**. Perform planning and analysis for complex projects, processes and/or ongoing programs. Requirements: Bachelor's degree or equivalent in business, computer science, MIS or related field plus 5 years of experience in planning, project management or process analysis of IT projects. Experience with CVS also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

Deployment Engineer to analyze computer sys & provide installation of wireless comm. s/w apps & sys on client sites & install/upgrade/troubleshoot s/w apps & setup comm connectivity betw 3rd pty h/w sys. 2 yrs exp. & 50% int'l travel req'd. Send resume & cover letter via mail or fax to Lightbridge, Inc. 320 Interlocken Parkway, Broomfield, CO 80021. FAX: 303-381-5500 (Job #1465.0121)

SENIOR SYSTEMS ANALYST to analyze, design, develop, test, enhance and maintain client/server and web-based application software using C++, Java, EJB (J2EE), JSP, JavaScript, Struts, Servlets, XML, XSL, XSLT, TopLink & Rational Rose (UML), as well as automated testing tools including WinRunner, LoadRunner & QA Run on Solaris, HP-UX, Linux and Windows 2000/NT/XP platforms. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related field with 2 yrs of exp in the job offered or as a Programmer/Analyst. Extensive travel on assignment to various client sites within the US is required. Competitive salary offered. Send resume to: John Watson, Venturi Partners, Inc., 9428 Baymeadows Rd, Ste 500, Jacksonville, FL 32256; Attn: Job VK.



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Prog Analysts to analyze, design/develop s/w apps using Java, JavaScript, VBScript, ASP, HTML, Weblogic, Oracle, SOL, CQBOL, DB2, CICS under Windows, UNIX & MVS OS; perform unit, functional, integration, regression and systems level testing; analyze user reqs, prepare design documents; develop & enhance online & batch programs; implement, install, test, debug and modify new/existing apps. Require: BS or foreign equiv. in CS/Engg. (any branch) & 2yrs exp. in IT. Travel involved. High Salary. F/T. Resumes to: HR, Global IT Solutions USI, Inc., 600 Stevens Port Drive, Ste 125, Dakota Dunes, SD 57049.

Megatech International is a small but fast growing IT company. We have several openings for software/project engg, system analysts. Candidates must have MS/BS degree or equiv. with exp. Attractive wage plus full benefits. Travel maybe required. Please apply at jobs@megatech.com EOE.

Infomerica is looking for system/programmer analysts, software/project engineers & computer consultants working at different sites (travel required). Candidates must have BS with 1-year exp. in IT fields. Skills of Oracle, Informix, Java preferred. Send resumes to info@infomerica.com EOE.

Programmer Analyst: Plan, develop, test and document computer programs. Send resume listing position sought to: Human Resources - Programmer Analyst Position, 4636 Hilton Corporate Drive, Columbus, Ohio 43232. EOE/F/M/V/D/Legal workers only please.

S/W Localization Engr: Real Idea is hiring engrs to evaluate localized s/w interface & h/w. Min reqt: BSCS + 2 yrs s/w dev exp. Job duties listed on www.realidea.com/careers. Send resume to ri-jobs@realidea.com or 1720 S Amphlett Blvd, #255, San Mateo, CA, 94402

Application Development Analyst - AstenJohnson, Inc. is seeking qualified applicants for positions at the company's North American headquarters in Charleston, South Carolina. The position's role is to design, configure, and deploy the Documentum 5 and eRoom 7 platform for content management and business collaboration. Requires bachelor's degree or foreign degree equivalent in Business, Information Management or related field and relevant applications development/deployment experience using Documentum and eRoom solutions. Apply to: Connie Wilson, Human Resources Team Leader, AstenJohnson, Inc., 4399 Corporate Road, Charleston, SC 29405.

Prog Analysts to analyze, design, develop apps using: C, VB, JavaScript, HTML/DHTML, EJB, JSP, ASP, Servlets, UML, Oracle, SOL under Windows OS; perform initial study of req and provide feedback; provide on site maintenance support, debug, modify, fine tune and perform code optimization. Require: BS or foreign equiv. in CS/Engg. (any branch) & 2 yrs of exp. in IT. High Salary. Travel Involved. F/T. Positions available in Elgin, IL and Lower Gwynedd, PA. Resume to: HR, Fourth Technologies, Inc., 1108 N. Bethlehem Pike, Suite 8, Lower Gwynedd, PA 19002. Specify location desired on resume.

Programmer/System Analyst wanted by Technical Consulting Co in CA to review comp systm capabilities, workflow & limitations to determine if requested s/ware dvlpmnt & modifications are possible within systm. Dsgn modifications & upgrade existing s/ware systm in UNIX envrmt. Must have Bach or equiv in Comp Sci & 2yrs exp in job offd or in related position in prgm, systm analysis or as Network Administrator. Respond to Mr. Manuel Ouiogue, VP, Tech Pacific Corp, 813 Ram Lane, Foster City, CA 94404. No calls.

Quality Assurance Engineers needed. Seeking candidates possessing BS or equivalent and relevant work exp. The relevant work experience must include 3 years working with Microsoft Windows and Unix. Duties include: Designing and implementing quality control tests, procedures and standards, Plan and direct activities concerned with development, application and maintenance of quality standards for software products. Work with Visual Basic, Microsoft Windows, Unix, Oracle, MSOL Server Win Runner and TestTrackPro. Mail resume, references and salary requirements to: Datacert, Inc., 3100 Timmons Lane #310, Houston, TX 77027.

Software Engineers needed. Seeking qual. candidates possessing MS or equiv. and/or rel. work exp. Exp. must include 2 yrs working with Linux & Perl. Travel as required. Duties include: Design, create, & modify computer programs; Maintain web based interface; Collect & analyze user requirements. Work w/ Linux, Perl, PHP, MySQL. Send res., ref. & sal. req. to Lindows.com Inc., Attn: Webdev 01, 9333 Genesee Ave., 3rd Flr., San Diego, CA 92121.

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Seeking qualified applicants for the following positions in Memphis/Collierville, TN: **Senior Programmer Analyst.** Formulate/define functional requirements and documentation based on accepted user criteria. Requirements: Bachelor's degree or equivalent in computer science, MIS, engineering or related field plus 5 years of experience in systems/applications development. Experience with object-oriented programming languages, application server technologies and a Java Messaging System also required. Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

Equity Finance Dvlpr wanted by Comp Sys Consulting Co in Manh. Design, implement & maintain back office systs, creating new modules for Swaps, funds & equities; provide tech solutions for trading systs; quant dvlpmnt & deployment work; dvlpr analytics for mkt systs, algorithmic trading & real time risk. Bach in Info Systs or Comp Sci & 2yrs exp in job offered req. Respond to: SC/HR Dpt, PO Box 4241, GCS, NY 10163.

Vignette Content Management. Seeking Vignette developer with strong Java skills and experience creating Detailed Design Documents for Vignette. Submit resume and references to Trac USA 27 World's Fair Drive Somerset New Jersey 08873

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Lead Java Developer (1) & Java developer (2 positions) in Bethlehem, PA

Responsible for programming, design and development using Java 2, J2EE, JSP, Servlets, HTML, Win2000/XP, IBM HTTP Server, Apache Server, SOAP, XML/XSL, Swing, MS SQL Server, IBM WebSphere, Borland Jbuilder, and Firepond Sales Performer Configurator (SPC) v10. Competitive salary, 40 hr. week, bachelors degree and three years experience required for all positions. Minimum six months project management experience for Lead Developer. Submit resume and cover letter (no phone calls) to Intelliquip, LLC., 1480 Valley Center Parkway, Bethlehem, PA 18017

We have multiple openings (nationwide) for IT professionals with Industry Exp. (Various skills combination reqd) in SCADA, GE XA 21 system Arch, VIM editor Design Patterns, UML, 3D Studio MAX, Corel Suite, Ouark Xpress, Natural, 4GL, PL1, Assembler, EARL, EDI ABAP/4, Python, Java with DB2, Informix, Sybase, Adabas, Neuron Data, COM+, ATM, ACH, POS, CORBA, Web Services, XSTL, Mercury Suite, Compuware Suite and Rational Test Suite, Peoplesoft, Ariba, Tibco, i2, Clear Ouest, StarTeam, SilverStream, Tapestry, Resign Project Management (PMP) with Conductra (preferred) ISO/SEI CMM/ SixSigma & ITIL/COBIT, Business Process Re-Engineering, Change Management, Business Analysis, Resource management, Procurement and RFP/RFO/RFI development. Some positions require MS or equiv. with 2yrs of exp. Other require BS or equiv. in any of the above with 5years of exp. Foreign educ. Equiva. &/or combination of educ/exp Accepted Travel/relocation reqd. Send Resume & Salary expectations to Director -Consulting Services, FutureTech Consultants, LLC #330, Research CT, Ste300, Norcross, GA 30092

Programmers, Software Engineers & Oracle/Apps. (Cary, NC): Design, develop, test apps in (1) J2EE, Versata Logic Suite, workflow engine in DB2 & Websphere on Unix from SAP and other legacy apps. migration; Oracle/Apps. 11i & rel. tools, RMAN, SQL Server Admin., Clarify, Oracle Financial Apps., Shell Scripts, Silverstream, Weblogic, Apache in various OS. Travel to Client Sites reqd. Prevailing wage. Mail resume to: HR, 2415 San Ramon Valley Blvd., Suite 4140, San Ramon, CA 94583. EOE.

Software Professionals: RS Software, a leading, globally positioned software development & consulting firm needs software professionals with exp. in the following skill mixes: Systems Analysts: Oracle, Unix, SQL Server, MPEX, MVS & DB2 Programmer Analysts: Assembler, C, C++, TPF & Windows. Business Systems Analysts: Requirement Analysis, marketing of customer specific IT solutions, liaison between multinational clients & IT professionals, preparation of project plans & technical proposals, assess customer satisfaction. IT-Technical Services Coordinators: Liaise with in-house IT directors & with the directors of the consulting services at multinational clients to coordinate & optimize IT services & minimize aggregate IT operational costs through appropriate triangulation of in-house contractors, domestic outside & overseas out-source. Undertaking of major infrastructures, IT developments & modifications & update technical innovations. Send resume to: HR, RS Software (I) Ltd. 1900 McCarthy Blvd., # 103 Milpitas, CA 95035

IT Manager, Accounting-Analyze company's requirements & procedures in accounting operations & design, develop, & modify company's accounting software systems to meet its needs. Supervise employees who use the systems. Req'd: Bach. Deg. in Accounting or Finance, 2yrs. exp in the job offered or in a business applications occup., & exp with & certification in Great Plains (Microsoft Business Solution). Resume to: Takara Belmont USA, Inc., 101 Belmont Dr., Somerset, NJ 08873-1204. Attn: R. DiPiazza.

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